

COMPUTERVIEW

Christmas is a family time; a time for reflection, and for quiet. But in the computerworld, there is little time for a pause as the rapid rate of technological advance quickens further each year.

OVER the next two years, IBM watchers expect the whole of System 370, including the 3030 series, to be replaced by DP Division, while General Systems Division extends the System 30 line to supplant System 3.

The first announcements are expected in January, with the launch of the E-series to replace the bottom end of System 370, up to the level of the 135.

Internally the 370/115 and 125 are multiple processor complexes, although this is largely hidden from the user. The E-series is expected to be more overtly modular, with a range of functional processor options for handling specific tasks such as communications, peripherals control and databases.

The announcement is likely to include at the minimum a revamping of the OS/VS1 operating system to accommodate the major changes in workload mixes which have taken place since 1970. It could well, in addition, come up with a new operating system, together with the ability to run VS1 and earlier systems in emulation mode.

Whatever the software, it will emancipate the low-end 370 batch user and move him into the bright new world of transaction processing, offering him a range of distributed options. It might also incorporate some kind of advance in secondary or intermediate storage, possibly bubble memory or charge-coupled devices.

Some significant enhancement in database capability is also likely, and there will no doubt be totally unexpected features in the new series.

This week Computer Weekly looks at some of the most significant events of the past year in which IBM, with its 3030 series price cuts in particular, once more sets the trend. During the year, Computerview

comments on the news and the trends as they develop. We end the year by looking ahead at some of the goodies that IBM may be unwrapping, some time in the next few years.

The surprises IBM has in store for 1978

At the top end of System 370, a replacement for the line from the 148 through to the 3033 is coming. Dubbed by some the H-series, it is expected to be announced substantially by mid-1978 and must above all run MVS efficiently.

It is possible that the E-series operating system might be a subset of MVS, but much more likely that there will simply be a power overlap between the E-series and the H-series, with considerable commonality between the E and H operating systems at the JCL level.

Although it will almost certainly have considerable distribution of functions between several processors, the H-series is likely nevertheless to be a central site system, designed to support a wide range of distributed systems presumably using SNA.

A key feature of H-series will be the System R relational database, which is likely to be presented as a compelling alternative to IMS, though whether users will rush to convert to it is open to question. It is not yet clear whether System R will include major elements of hardware or consist entirely of software.

It is expected to be announced within two years, and a version 'is said to be running already at Boeing in the US. In whatever shape it finally appears, it will have to mesh with MVS, be-

cause otherwise, to quote Gene Amdahl, IBM will have made an enormous investment in MVS for nothing.

A bewildering array of options will be presented to 370 users, because in February IBM is due to announce DP Division's mini-computer, Orbit.

Likely to offer more power than does GSD's Series 1 mini at present, Orbit is also likely to be offered with more system software. Users should find it an enticing alternative to many of the conservative network products that currently make up IBM's catalogue, with devices like the 3790 transaction systems and the 3705 communications controller.

On all the new products, there is likely to be a strong price-performance improvement over the products that they replace, with labour-intensive items like software and maintenance representing an increasingly large proportion of the cost.

There is some confusion in the minds of many about the relationship between IBM's DP and GS divisions, but in marketing terms they are best regarded as two independent companies. What GSD does with System 3 and the System 30 line bears very little relation to what DP does at the bottom end of 370, and some users may well be wooed by salesmen from both divisions.

INTERRUPT...
Ode to an acoustic coupler

FOR Christmas, John H. Davidson of Graphic Display Systems, Cambridge, a frequent contributor to Interrupt, has burst into verse. He wins the £5 Interrupt prize plus a £3 poetic bonus. More poems in Downline Special on page 14.

When I from the joy of 'oustic coupled interface am turned,
By hard or software faults of gravity unknown,
And when from flickering graphics screen am spurned,
To wait while experts far away do groan,
Then to a task of unremitting pleasure I repair:
The handset from its cosy nest displaced,
I whistle to the coupler some sweet happy air.
In hope to make thus, artistry, on display's face:
At first a line, a curve, a dainty wisp of straw,
A character or two give abstract form,
And then perchance a wave or mountain's drawn,
And by degrees a thing of beauty's born.
But heed, dear Friends, the one who whistles first his name along the line,
Shall then be deemed computer, not a mind.

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Ten
years
ago...COMPUTER WEEKLY
DECEMBER 14
AND 21/28, 1967

THE government's Buy British policy aroused fears that the development of the UK computer industry would be stifled in the long term. The UK could not match machines such as the CDC 6600 and proposed 7600, and the Burroughs B5500... Philips entered the general-purpose computer market with the announcement of the P1000 family... The management structure of the BCS was reshaped and a management board, representing branches, membership, education and technical interests, were formed... Polish production of computers was entering a new stage, with serial production of the 1103s and 1205s.

Fowl system copes with Christmas rush

READERS buying a Chunky Chicken for Christmas will be fascinated to learn that D. B. Marshall (Newbridge), the firm that processes nearly 30 million of them every year, is now using a Seecheck key-to-disc system from Radifon Computers for its data input.

The Seecheck system complements D. B. Marshall's existing Burroughs 81700 computer and is being used for jobs like ledger updating, payroll, farm management statistics and order entry.

Future plans include a fowl inquiry — sorry, a file inquiry — system with Seecheck terminals in use departments.

Organisations outside the currently booming poultry industry that have placed orders with Radifon of late include the Nottingham Building Society and London-based magazine distributors Argus Distribution Ltd. Both are installing Radifon Redicheck systems.

NCR snubs union on sales policy

By Robin Webster

A CALL by ASTMS for a say in NCR's sales policy, included as part of its annual wage claim (CW, December 1), has brought a quick response from the company.

Normally, says NCR, it would not publicly comment on its discussions with unions but this particular point needed clarification.

"NCR has an agreement with ASTMS restricted to field engineers which incorporates

standard consultation procedures," said Don Fraser, director of personnel resources at NCR. "There is no way that marketing policy will be accepted by the company as negotiable, either with ASTMS or any other outside body."

"The determination of sales policy is the responsibility of senior management," he continued. "It is totally unrealistic to suggest that it can be delegated to periodic review at the bargaining table and dealt with as an addendum to an annual wage claim for field engineers."

ASTMS says that the need to have some say in the policy stems from concern over the long-term interests of its members. Also, there was some doubt as to whether the company was going to retain an element of mechanical business for the future.

This point was taken up by Rex Fleet, NCR's managing director. "After a difficult period of transition, NCR has now consolidated its position as a major supplier of computers and terminals," he said.

"Our sales policy, our R&D investment and our future lies in achieving further growth and success in the dynamic environment of EDP. There is no going back. There is no question of our dissipating our resources

AT&T's Bell data net expected early in 1978

US OBSERVERS now believe that AT&T will begin introducing the so-called Bell Data Network early in 1978, although probably under another name. Service is likely to be introduced in one or two states initially, but it is intended to grow nationwide.

The network is a major plank in AT&T's challenge to IBM, and has been designed to provide an attractive alternative to IBM's Systems Network Architecture concept (CW, November 10). It will allow point-to-point communications between any commonly used brand of terminal via a communications processor

at the user site. It appears that, as with Transpac in France, the charges will be distance-independent and based solely on the volume of message traffic sent.

It will use both store-and-forward and straight packet-switching techniques depending on the urgency of the message and therefore the priority assigned to it by the user. The delay will vary from 200 milliseconds to four hours.

Key feature of the network will be the additional availability of software packages for things like data entry, inquiries, RJE and message distribution.

Micro show success

MORE than 30 companies have reserved stands at Microsystems 78, and the exhibition side of the event already shows promise of being a runaway success.

The organisations which see Microsystems as a useful means of bringing their products and services to a wide spectrum of engineers, systems designers and personal computing enthusiasts, range from giant international corporations down to the relatively small systems design companies which are playing an important part in the microprocessor boom.

Among the "giants" are Texas Instruments, Intel, Digital Equipment Co. and Plessey Microsystems. But at the other end of the scale are smaller companies such as Compelec

Co-Mart, and Lynx Electronics which are making their name in the personal computing field.

The important area of software and systems design for microsystems is represented by CAP Microsoft, among others. Microsystems 78 exhibition will provide something of interest to most microprocessor users from OEM purchasers to personal computing enthusiasts.

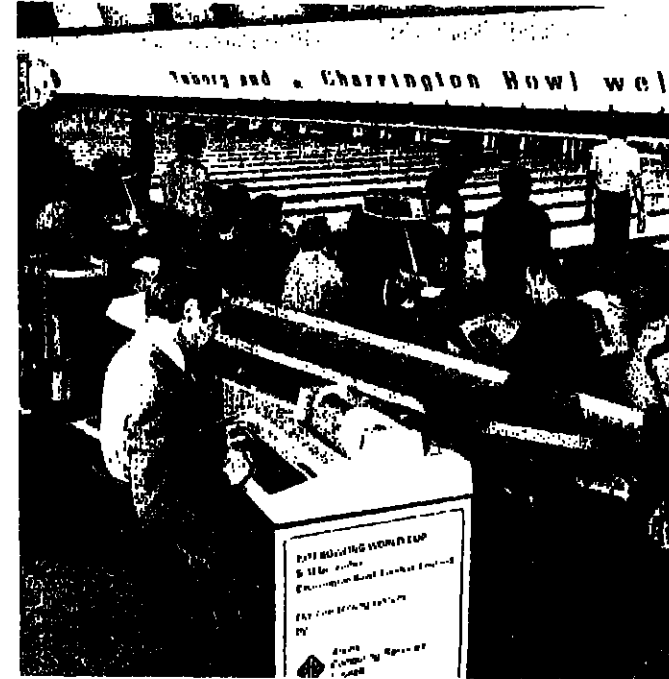
Those who want to know more about the Microsystems 78 seminar should contact Chris Higwell, Room 125, Dorset House, Stamford Street, London SE1. Telephone 01-261 8738. To book stand space at the exhibition, contact Lloyd Collins at the same address. Telephone 01-261 8797 or 261 8743.

Philips into UK banking

A SIGNIFICANT breakthrough into the London banking market has been made by Philips with a contract for a two-processor PTS 6000 banking terminal system from Citibank's London branch.

Citibank has installed the system at its Strand offices, and intends to use one processor for order processing and stock control of the \$800 million of travellers' cheques it issues annually. The other will be used as a six-position teller terminal system for all branch transactions.

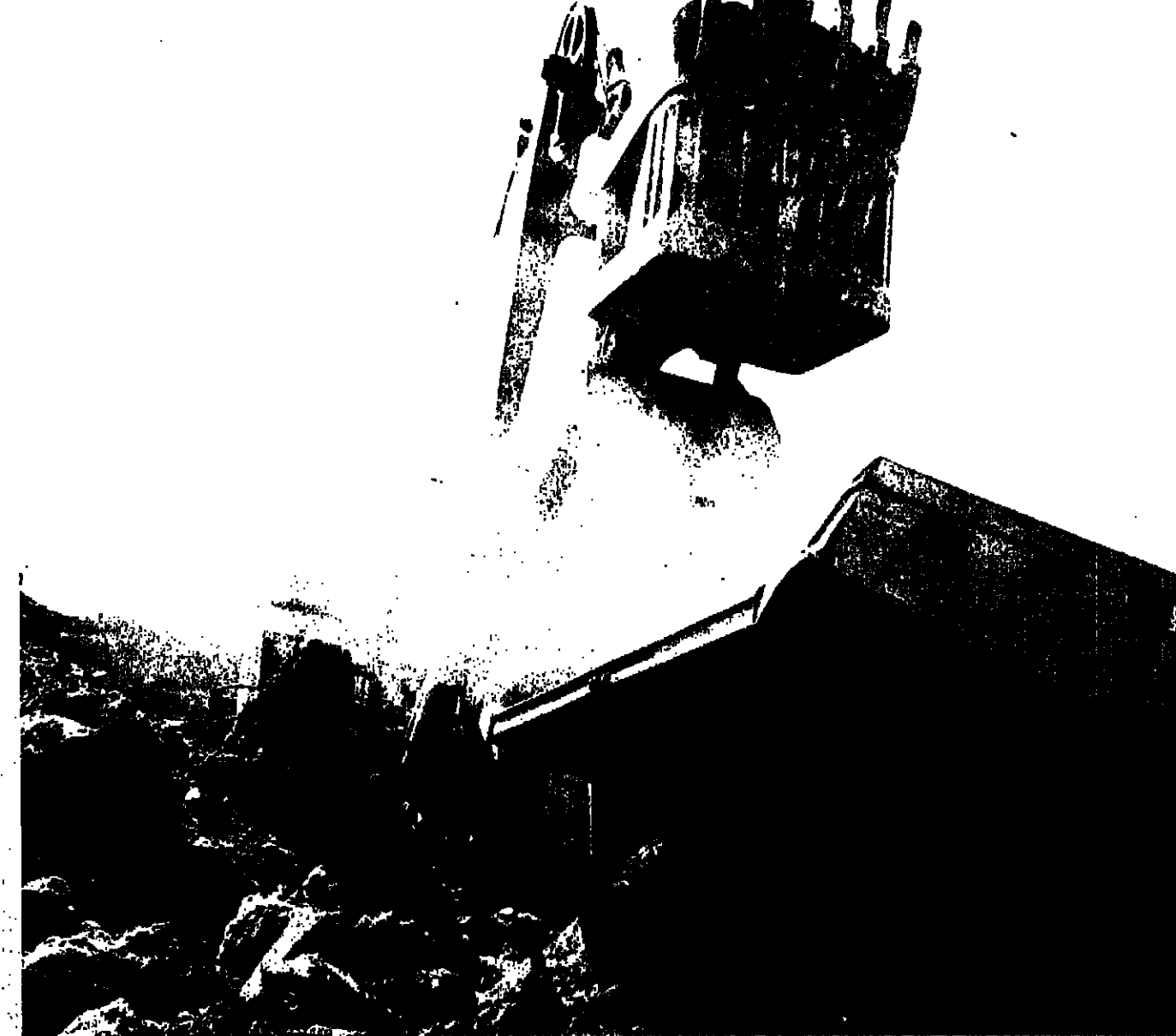
The teller system, which includes printer, keyboard and plasma display at each position, will transmit batch data daily to the bank's IBM 370/135 mainframe. The travellers' cheque system, consisting of two VDUs and a line printer, will also serve as an emergency back-up system. Citibank has installed an enormous number and variety of minicomputers at various sites throughout the world.



The 1977 Bowling World Cup, held last week at the Charrington Bowl, Tolworth, in south west London, attracted 78 competitors from 40 countries and the computerised scoring system was provided by Atkins Computing.

It was the first time the event had been held in the UK for 11 years. As the pins fell scores were input online to one of Atkins' Sigma 8 computers at nearby Epsom, using the terminal seen here behind the bowling lanes. Printouts listing results in ascending order were output at frequent intervals and placed in front of a closed-circuit camera for display on TV monitors.

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MICHIE'S CHRISTMAS VIEW

Closely observed trains...

READERS were strangely stimulated by "Trains going east and trains going west" (CW, November 10) and an avalanche of rules poured in for discriminating the two kinds of trains.

The following were the three simplest rules found by Larson and Michalski's inductive learning program:

- (i) If there is a triangle containing car immediately followed by a polygon containing car then Eastbound else Westbound (polygons of course include triangles);
- (ii) If there is a short closed car then Eastbound else Westbound; and
- (iii) If there are two cars, or if there is a jagged-top one then Westbound else Eastbound.

Out of a total of 72 readers' entries, no fewer than 44 hit on rule (iii), and six others offered a version of this same rule based on counting axles or wheels rather than trucks.

Amazingly, only three entries corresponded to rule (ii), in many ways the simplest.

A fourth entry could be scored as (i) except that the various kinds of closed cars were separately listed instead of being given as a single description. No entries clicked with (i), but some were at least as terse, such as:

If there are more than two kinds of freight, then Eastbound else Westbound

produced by two readers.

How do we compare the efficiency of this Pascal program running on the CDC Cyber 175 with the ponderings of Computer Weekly readers?

Computation time was around 10 seconds. The Cyber can be credited with approximately 10 million instructions per second, making a total outlay of 100 million instruction-executions.

According to J. M. Stroud, cited by Halstead, the number of binary discriminations per second which the human brain can manage at a sprint is about 20.

Although Edger Dijkstra was once clocked at 50 per second for a three-minute burst, for mortals a more relaxed average of 10 per second can probably be assumed. So how to relate the execution of one Cyber 175 instruction to the making of one binary comparison?

At this point I close my eyes and declare that one instruction-execution is worth more than 10 and less than 100 binary discriminations (BDs). If this be so, then the Sargon-Nichalski program required a total of between 10⁶ and 10⁷ BDs, the equivalent of thinking

continuously for between 10⁶ and 10⁷ seconds — i.e. between three and 30 years of continuous mental effort.

So readers who polished off the problem in seconds or minutes are well ahead of the program in their algorithms (whatever they may be) for inductive logic, although probably not in their ability to represent the processes explicitly.

Children have more difficulty in inventing rules. Even at age 10 the transition from judging everything by its concrete circumstances to an ability to cope with abstracts and hypotheticals has only just begun. Readers might like to try their children on their ability to understand the train problem.

An interesting feature of the first two rules is that a program knowing nothing about counting could still have got them. At the other extreme one reader who was bitten by the counting bug found that the number of sides in the cargo (circle counts 1, triangle 3, etc) is a factor of 60 if and only if the train is going West!

We sometimes forget what an elaborate trick counting is. "At first thought," writes L. L. Conant, "it seems quite inconceivable that any human being should be destitute of the power of counting beyond 2. But such is the case; and in a few instances languages have been found to be absolutely destitute of pure numeral words."

On the other hand the crow has been said on good evidence to count up to four. Lichtenberg's belief about his night-inkale seems less well founded. He gave the bird three mealworms every day, one at a time, and remarked that after the third it knew the feast was over.

The owner of Clever Hans, the counting horse, had a similar faith, but the horse's art consisted in reading his master's involuntary signs when the pre-set number was reached.

For myself, I find that the Australian aborigine system of "One, Two, Many" works pretty well for most purposes, although when applied to the number of shopping days to Christmas it tends to cut things a little too fine. On that thought let me wish all readers the merriest of Christmases, and a Happy New Year.

References: M. H. Halstead (1975) Toward a theoretical basis for estimating programming efforts. Technical Report CSD-TR 143, Purdue University, USA. J. Larson & R. S. Michalski (1977) Inductive inference of VL decision rules. ACM SIGART Newsletter, No. 65, 35-44.

FUTUREVIEW

MAN first used his fingers for counting when he needed to keep a record of something, for example sheep. As his herd grew his counting method became quicker and could handle higher numbers with two main aims: first, efficiency; second, more time for leisure.

As time has gone by, things around Man have grown more sophisticated with those two aims in mind. First the abacus, then came the mechanical aids such as Babbage's calculating device.

Then came a great advancement in calculating machines, a machine capable of doing calculations in a fraction of a second, the computer.

From first generation valves to third generation integrated circuits the computer was developed with the same two aims in mind, and now the computer can do calculations in microseconds.

But what about the future?

I think four main things will change in the future due to the computer: safety, travel, public services and dangerous jobs.

Although having computers checking computers is not economical, I think that in some cases it is essential for reasons of safety. Although some manufacturers claim that their computers are infallible they sometimes do go wrong. In the case of a Jumbo Jet for example, with pilots in the jet and personnel in ground control the passengers are quite safe.

With pilots and onboard computer in the jet and personnel in ground control the passengers are safer still. But with pilot and onboard computer in the jet and computer with one or two men checking in ground control, a crash would be exceedingly rare. I think planes carrying 400 or more passengers should adopt this latter system in the future.

Additionally, as far as railway tracks are concerned, sections near platforms and bridges should be rigged so that when a person falls on to the rails a message reaches the train on the particular route.

This could be done by a computer. When a person falls on to the rails a monitor detects the fact this has happened and since it is connected to the computer, a message can reach the train in microseconds enabling the emergency brake to be pulled.

When we discover how to split up matter and reassemble it anywhere in the universe, computers full of IF and GOTO statements will take complete charge of the whole operation.

In fact the most luxurious and leisurely way is the safest way, leave the work for computer controlled robots (CCRs) and computers. All we would have to do would be to program them and save our talents to provide construction workers. Also to check via scanners, closed circuit television — computers aren't infallible.

In the not too distant future we will still use the old 1977 rails. There would be one main control point from which a computer would separate. All the trains would have TV cameras located at various spots on the chassis which would be connected to the computer.

Further on in the future, due to their speed and position high above the land, with virtually the same system as the "old" trains.

Space travel would use computers to their greatest advantage. This is mainly due to the fact that space flights will take so long that we will need to put our astronauts in suspended animation. While they are in sus-

Schoolboy's ideas of a world run by robots...

pendent animation who controls the ship?

The obvious choice is the computer or a CCR if necessary. My choice would be to have a computer. Also what must be taken into consideration is the fact that energy must be conserved. So I suggest a kind of "Brain" Computer. When the crew is awake the computer performs such operations as calculating ETAs.

But when the crew is in suspended animation an extra part of the computer is linked in, which steers the ship and avoids obstacles; however, when it cannot handle the obstacle it wakes the crew.

This arrangement of the computer is rather like the conscious and unconscious mind of the human brain, with this difference: the most important function computers will be used for in space travel is avoiding catastrophes in microseconds by calculating faster than man will ever do.

A community of robots, computers and humans involved together in a reliable, workable and economical system. That is the Futureview of 14-year-old David Browett, of Coventry, who won the Young Computer Scientist of the Year award, organised by the Coventry branch of the BCS.

David believes that a machine take-over of the world is inevitable. He shares this belief with two other Futureview contributors, Arthur Clarke (CW, November 10) and Isaac Asimov (CW, October 13), in this extract from his winning essay.



As computers get more advanced they will dominate the control systems of space ships. As in "2001: A Space Odyssey" (by Arthur C. Clarke) the computer will run the whole ship. But there is a lesson: never build a perfect computer.

A perfect computer will be a computer of our own image. This means it will be prone to experiencing something like human emotions: it might get angry or bored or eventually go completely mad.

As man dominates the universe he will discover more and more planets. Some of these are bound to be able to sustain life and these life forms might develop into civilisations. Man being alone in his search, will be definitely interested in promising life forms but he cannot leave men on every planet that he visits.

So how can their life forms be monitored?

The answer is a mini rocket housing a computer. Such computers will monitor and relay data back to Earth and, in addition, will take off and head for their next destination if required.

If possible, these monitors would be protected by some kind of force field so they would

not be damaged by the "natives". If intelligent life did evolve the force would act as an intelligence test. When they (the aliens) broke through the force field the computer would send one last message back to Earth that intelligent life had evolved.

CCRs will dominate the emergency services in the future mostly because both fire and police services involve a degree of danger. Imagine a fire in a house. The firemen pour on foam and man ladders. They climb the ladders and smash the windows with hatchets. They climb through, pick up the victim and climb down the ladders holding the victim in a fireman's lift.

During that episode the fireman might be overcome by fumes or the fire might cause a plank of wood to fall on him; he might even have to climb into an asbestos suit before he rescues the victim.

A CCR would walk up the wall, smash the window with its

'When we discover how to split up matter and reassemble it anywhere in the universe, computers full of IF and GOTO statements will take complete charge of the whole operation.'

the computer would send data to the CCRs in security and these would arrest, or in extreme cases, kill the intruder. I do not mention medical services because I don't think anyone would like a CCR poking around in our insides — except another CCR.

Who wants to blow their brains out for the sake of a plane? I think dangerous jobs such as the job of the test pilot should be undertaken by a computer or a CCR if needed. One reason for this is the question of reliability. When you are testing a million pound plane you want no mistakes.

By programming a computer you can hope for such reliability; also radio control could be used but it could go wrong more easily than a computer. If you are testing many different kinds of aircraft a CCR would be better.

A humanoid-type CCR would sit in the cockpit like a pilot — and if the plane crashes they have not lost a life. They could also be used in atomic plants, oil rigs — in fact, anywhere.

In the future Man will have a lot of time for leisure, and I believe that every man/woman will own a CCR or else a group will share a computer.

You will wake up, program your CCR for the day's work and rest for the remainder of the day. You might telephone a friend using the new computer operator which offers a quick and reliable service, or plug your computer link to the library circuit and, using a VDU, read a book (which in actual fact the computer is scanning and transmitting into your link).

You might plug your computer link into the information circuit and read from your usual display unit the weather, traffic information, cricket scores, football results, almost anything.

Next your shopping: you will type in your needs and slot the card into the transmitting unit. The information is read by the computer and dispatched to the local supermarket. The food is loaded onto a CCR and the cost is registered in your account. It is unloaded the food at your house and returns back to the supermarket.

What CCR could do in space is unimaginable. It wouldn't need oxygen or food, enabling it to stay working until it ran out of power.

The fact is, we don't have the materials on our planet to keep just a few which come to mind. So to keep our civilisation as it is we must mine other planets. And CCRs are perfect for the job, allowing humans to live in comfort.

Those jobs such as a factory worker checking bottles, could quite easily be done by a computer.

What I have described is an entire community of CCRs, computers and humans involved together in a reliable, workable and economical system, one which I think would work.

NEWS IN BRIEF

\$104m French exports to US

BENEFITS to France of having CII-Honeywell Bull manufacturing mainframes, mainly Level 64, for export to the US, are underlined by US Department of Commerce Import-export figures. The Department estimates that in 1977 France exported \$104 million of computer equipment to the US, whereas the UK exported only \$32 million. Even Italy, with Honeywell building Level 62 there, did better than the UK, managing \$44 million of exports.

In the reverse direction, the UK imported an estimated \$396 million of equipment, France \$300 million and Italy only \$98 million.

ITT 'replaces' IBM

MAIN UK offices of the Royal Insurance Group are to be equipped with ITT 3280 VDU-based systems worth over £600,000. They replace IBM 3270s and are part of a plan to link all the Royal's offices to its two IBM 370/158s at head office in Liverpool.

Panther picks ABS

AN Allied Business Systems Multibus computer has been installed by Panther Westwinds, the prestige car maker. The £20,000 system features 48K of memory.

Gas Corp order

THE British Gas Corporation has ordered £100,000 worth of equipment from Taylor Instrument, of Stevenage, to be installed at the liquidation and storage plant to be built on the Isle of Grain. The Taylor Quick-Scan 1300T and 1300R electronic transmitters and controllers will measure and control temperature, pressure and flow throughout the plant.

ADDS' profits up

REPORTING profits up 17% at \$3.84 million on turnover up 37% at \$22.6 million for the first nine months of 1977, Applied Digital Data Systems of Hauppauge, New York, noted that during the July to September quarter, deliveries to NCR represented 41% of all business done.

Takeover

THE bid by Microdata for CMC Ltd has been accepted, and the US company has acquired 75% of the operation for \$4m. Ray Parry, chairman and managing director, remains as chairman and becomes president of CMC Europe; Irvine Ella becomes CMC managing director; and Don Fuller, president of Microdata, and Gary Liebel join the CMC board.

PO merger

MERGER of the Post Office Data Processing Service with the telecommunications branch, recommended in the Carter Committee report on the future of the Post Office, is to be implemented next April.

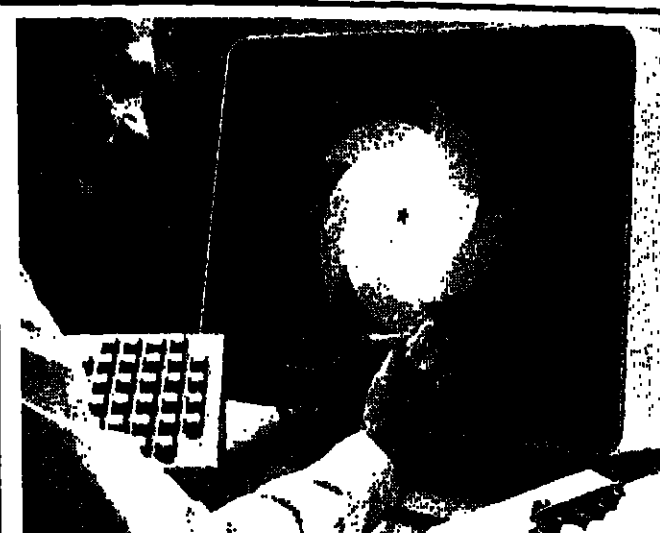
High-speed bus

A HIGH-SPEED inter-computer bus is the key to a multiple-processor functionally distributed system concept announced by Datapoint in the US.

It will be launched in Europe at the Datapoint users conference in Birmingham next April. The bus can be up to 2,000 feet long and carries data at 2.5 Megabits per second.

2900 sales

STATISTICS on world sales of ICL's large 2900s at September 30, 1977 show that there were 23 2900s worth £62 million installed and on order. The 2970, order book stood at eight, worth £12 million, the 2970, at 42, worth £82.4 million and the 2980 at 66, valued at £86.8 million.



The operator of this IBM 3250 graphics display system is using the light pen and program function keyboard (left) to manipulate data on the screen of the 3251 display station. He uses the alphanumeric keyboard (right) to annotate the picture and to input data to the system.

Improved IBM graphics

AN image with considerably less flicker is one of the main improvements over the IBM 2250 interactive graphics display system offered by its successor, the 3250.

The 3250 was developed for IBM by Sanders Associates under an agreement made early this year to supply Sanders' and trust suit against IBM (CW, February 3), and is being manufactured by Sanders at Nashua, New Hampshire. This is under the direction of IBM's plant at Raleigh, North Carolina, and the IBM laboratories at Hursley in the UK.

Some of the other display improvements over the 2250 provided by the 3250 include four different character sizes, compared with two on the 2250, the use of eight strokes to form each character, instead of four, and four different line types — solid, dashed, dotted and dot-dashed.

Another important difference is the use of two levels of control instead of one. The 3258 control unit connects directly to the interface channel of the host mainframe and can drive up to four 3255 display controllers located up to 5,000 feet away.

Each 3255 has a 32K refresh memory and handles

vector and character generation for one or two 3251 display stations.

The 3251 comes with a 21-inch display, an alphanumeric keyboard, a hand held light pen and a program function keyboard. The latter has back guide keys which enable the host mainframe to guide the operator.

Despite the more complex control provided by the 3250 and the other improvements over the 2250, it costs less than the existing system even with only one display station. IBM quotes £130,576 for a 3250 system with four displays, two display controls and one 3251.

IBM points out that the 3250 is generally compatible with existing 2250 applications programs and is supported by its Graphics Programming Services package, and its Graphics Sub-routine Package, both of which run in a VS environment.

● A tough competitor for the 3250 could arrive on the scene next year in the form of the interactive graphics display system that Calcomp is developing around the Solar minicomputer, SEMS.

Micro could be the 'black death' of UK industry

Martin Banks reports on the Impact of Electronics Conference

INDUSTRY must rapidly come to terms with the capabilities of electronics or risk the real possibility of "going under". This was one of the themes to emerge from the Impact of Electronics Conference, organised by Electronics Weekly and held at the London Hilton last week.

The 150 delegates were told that the microprocessor, for example, could easily become UK industry's "black death" if its current inflexible and complacent attitudes were not changed.

Alex d'Agapeyeff of CAP pulled few punches in an emotional presentation. "Europe is so inflexible and complacent," he said. "There is an almost Canute-like belief in static markets that technological developments cannot change. We think that exports don't matter and Japanese imports don't count. In fact many people now buy Japanese to get quality products."

And the automated office? d'Agapeyeff attacked the attitude held by many that says "I have an automatic right to my own secretary." The UK, he said, had an idea fix that the automated office was pure Hollywood fiction and not a practical reality, a point made earlier in the day by David Kohler, of IBM. d'Agapeyeff suggested that 1979 could be disaster year for UK industry, and gave one or two pointers. US car manufacturers, for example, were heavily committed to using microprocessors in their 1979 models, yet America had a falling birth rate. These cars (almost certainly better than UK models)

Two die in plane crash

AMONG those killed in the crash of the hijacked airliner in Malaysia on December 4 were Harold Godfrey, London region manager of Dataaskil, and Donald Matthews, a partner in the management consultancy Peat Marwick Mitchell. Both were visiting the Far East for their companies.

Godfrey joined Dataaskil in

1971, and had been responsible for the development of the company's operations in the banking and financial fields. He leaves a widow and three children.

Matthews joined Peat Marwick Mitchell in 1959, and became an executive partner in 1968. He leaves a widow and daughter.

ITT mini controls power

BULK distribution of electricity in the Central Electricity Generating Board's North West Region is being controlled by an ITT computer system based on the hardware of the 8400 ADX message switching system and programmed mainly in Coral.

Data related to the state of switches and power flows is processed by the mini, a dual General Automation SPC-18 system called by ITT the 1650, and displayed on 20 VDUs and on-mime wall diagrams. Worth £1 million, the system replaces electro-mechanical equipment and is the first of a new standardised design adopted by the CEBG.

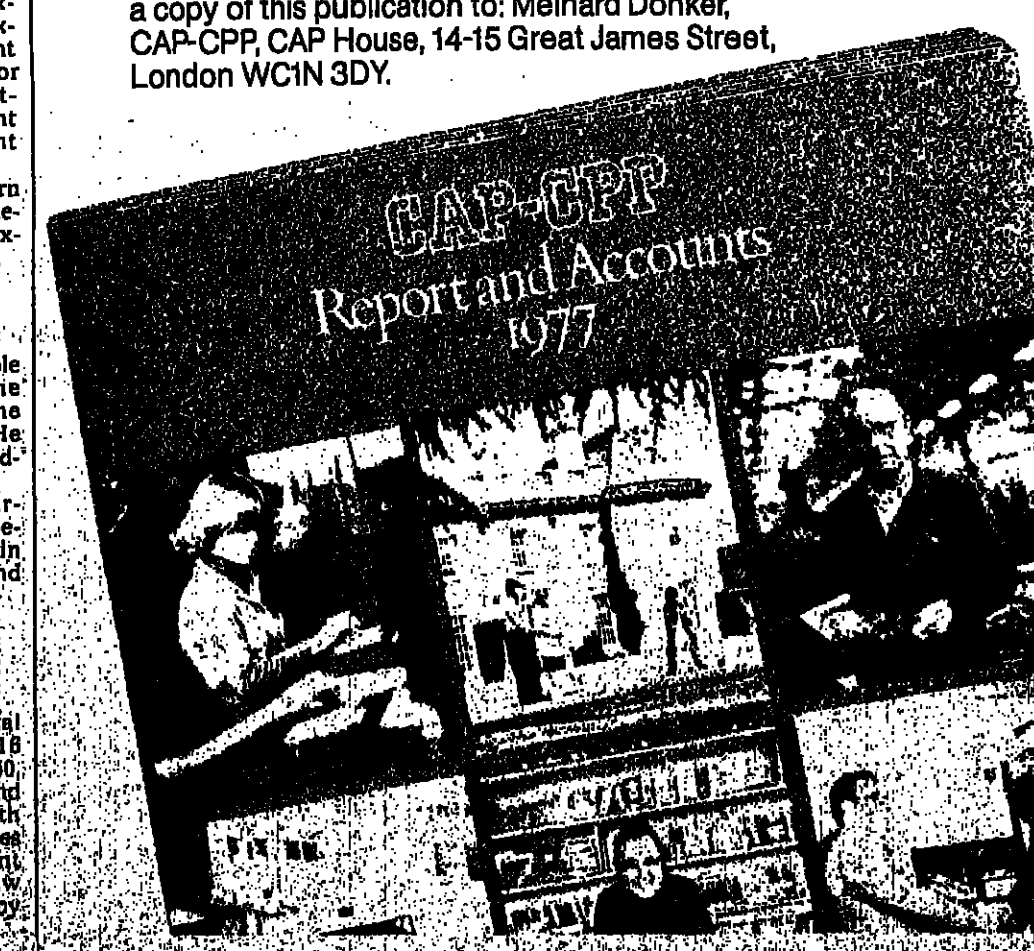
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For full details of the Group's services and progress, write for a copy of this publication to: Meinard Donker, CAP-CPP, CAP House, 14-15 Great James Street, London WC1N 3DY.





Members of Exhall East Community Association, Coventry, after their men v women "transvestite" football match in aid of the Walsgrave Hospital Scanner Appeal.

Walsgrave appeal success

LESS than six months after being launched, the Walsgrave Hospital Scanner Appeal has reached its £220,000 target, and money is still coming in. The Coventry hospital now has enough money, with a £100,000 contribution from the Warwickshire Regional Health Authority, to buy the CAT scanner it needs, which will serve Coventry

and the county of Warwickshire. Money has poured in from every possible source, jumble sales held by kids in parents' garages, pensioners' savings, gifts from small and large companies, specially organised dances, funny football matches, sponsored walks and sprints and swims, shop-floor collections and the sale of T-shirts.

The CAT scanner, which uses a computer to process X-ray data and produce a cross-sectional image greatly superior to that obtained by conventional X-ray methods (CW, October 20), is now considered a necessity in a well-equipped hospital. But health authorities' budgets do not often run to £320,000 for one machine, however sophisticated, and the money usually has to be raised elsewhere.

For example, the Royal Marsden Hospital in Surrey has recently acquired an EMI scanner which will be used both for cancer research and for diagnosis. Although the scanner was paid for by the Cancer Research Campaign, the amount made a sizeable bite into the Campaign's budget for the year (and in fact an appeal has been launched in the computer industry to take some of the strain by raising the cost of the scanner's computer, see below).

The Walsgrave Appeal was launched by Bill Whitmore, a surgeon at the hospital, and Mike Cotton, a chartered surveyor of Coventry. It was given extensive coverage by the Coventry Evening Telegraph, and then it really took off. Children in the summer holidays, workers in factories, hospital patients, church congregations, all vied with each other in organising events. The money started to roll in fast, and by autumn the take was averaging £7,000 a week.

Coventry City FC gave the players' fines, Massey-Ferguson gave £20,000, Chrysler gave a car, a retired miner gave £250 "from a tin box", and the Leamington Lions gave £1,000 from their annual sponsored pub-crawl. Three organisers gave a concert. Arnold Lodge School, Leamington gave £500 from school funds.

More events are scheduled for the New Year. "No way will the extra money be wasted," says Mike Cotton. "We shall now be going for the optional extras, so that the people of Coventry and Warwickshire can have the best machine in Europe."

And no-one can say they don't deserve it.

● Details of Walsgrave Scanner Appeal events can be obtained by phoning the Scanner Office on the hospital's number, 0203 613232. Those interested in contributing to the Royal Marsden Appeal should contact David Ayers at Tritech Computer Services, 01-948 4213, or the Cancer Research Campaign at Carlton House Terrace, London SW1W 5AR.

THE role of online computer systems in purchasing and supply will be examined during a one-day conference organised by the Computer Specialist Section of the Institute of Purchasing and Supply. The event will be held at the Europa Hotel, London W1, on January 26. Further information from Mrs C. Moulton, IPS, York House, Westminster Bridge Road, London SE1 7UT. Tel 01-928 1951.

THE use of PARX exchanges and the application of new technology to private switching systems will be discussed at a conference entitled Private Electronic Switching Systems scheduled for April 16-17, 1978. The conference is organised by the Institution of Electrical Engineers and will be held at the IEE Headquarters, Savoy Place, London WC2. The meeting has been timed to follow the COMTELEX exhibition '78. Expositions: The Institution of Electrical Engineers, 11, Bedford Square, London WC1. Further details of both events from the IEE Conference Dept, Tel 01-240 1971 ext 201.

PEOPLE

Univac man moves to US

UNIVAC director Ted Jones has moved to the US headquarters as director of public relations. He will be based at the Univac Worldwide Communications Department in Blue Bell, Pennsylvania.

Jones, a chartered accountant by profession, joined the company in 1964 and has held several management positions with Univac, including that of director of marketing, UK.



Jones

Rene Berger, formerly director of Honeywell's South-West and Scotland region, has been appointed director of the DP division, and Jim Duncan, ex-Northern region director, becomes director of the general systems division.

The former Southern region director, David Crofts, becomes director of Southern region and central government within the DP division. Fred Snow, who was director of the former field sales division, is transferring to Honeywell's US Information Systems Group as director of marketing.

Derek Slade, a senior consultant with the P-E Consulting Group, has joined the board of Park Business Systems, a subsidiary of P-E International, and will be responsible for the marketing and support of the MIMS package.

Fred Ainsley joins Selcon as sales consultant specialising in automatic systems. He was formerly manager of Westinghouse's sales group for computer-based telemetry systems.

The real time systems division of Selcon is joined by Rob Clubb, former senior design and development engineer with Allied Business Systems, as a technical consultant, and Barrie Brinkman, previously project leader in the Post Office's telecommunication development department, as a consultant.

Roger Parsons, until lately sales manager for the London region with Prime Computer UK, has been appointed sales director.

Richard Gill and Clive Owen have joined Systems Resources, the Coventry-based software house, as consultants. Gill, who is an IBM TP specialist, came from Bokelite Xylomite where he was a senior programmer, while Owen was previously a consultant at Altergo.

Gordon Young, computer officer at Liverpool University has been promoted to section manager, software, in the computer lab. Roderick Cook has been appointed a demonstrator in computational and statistical science.

Randolph Madoo has joined L.P. Sharp as an API consultant. He recently obtained his BA degree in computing science and statistics from University College, London.

Frank Chahre becomes personnel director with Rockwell International's electronic systems group in Dallas, Texas. Previously he held the same position with the company's Collins commercial telecommunications group.

Peter Breeze, formerly a senior systems engineer with Unicon, has been promoted to UK technical support manager.

Ray Gulnan of Data Data Process, until recently sales manager, has been appointed regional manager for Munster.

John Shuffelbottom, assistant systems design manager for Greater Manchester Transport, has been promoted to data centre manager.

DIARY

DECEMBER 19
Minicomputer for information retrieval. BCS Information Retrieval Group/Adlib Informatics Group on Minicomputer for Information Retrieval. University of Manchester Institute for Science and Technology, Manchester. 11.00.

DECEMBER 20
Human reliability in man-machine systems, collected Institute of Electrical Engineers, IEE, Savoy Place, London WC2 10.30. Register with IEE.

Systems approach to pictorial pattern recognition, lecture series. Merton Nader, Machine Intelligence Research Unit, Chesa Lab, MIRU, University of Edinburgh, 10.30.

JANUARY 2
Computerised tomographical scanning, lecture. Institution of Electrical Engineers, IEE, Savoy Place, London WC2. 5.00 for 5.30.

Impact of minicomputers in developing countries. Dr. Y. Packer, BCS Developing Countries Group, Zeus Hermes, Copper Street, London WC1. 18.00.

JANUARY 5
Management matters. Rt Hon Sir Harold Wilson, BCS, Merseyside branch, Adelphi Hotel, Liverpool, 18.00.

JANUARY 9
Integrated circuits - reliability, colloquium. Institution of Electrical Engineers, IEE, Savoy Place, London WC2. 13.30. Register with IEE.

Computer staff recruitment and remuneration. R. Camfield, BCS, Bedford branch, Crest Motel, Luton, 18.30.

JANUARY 11
International telex switching systems. C. Hartman, E. Danos, Institution of Electrical Engineers, IEE, Savoy Place, London WC2. 17.00 for 17.30.

What this IBM thinks of the independent computer specialist. Gerry Fisher, Association of Independent Computer Specialists, AICS, 8 Leicester Street, London WC2. 18.30.

Visit to Young's Brewery and computer installation. W. S. Kingston upon Thames branch, Regional Management Centre, 40 Cumber Road, New Malden, 17.00. Numbers limited.

Operating systems. Geoff Howell, ICS, North London branch, West Lodge Park Hotel, Cockfosters, Middlesex, 19.45.

Data input without a keyboard. John Gier, Roy Thomas, BCS, South Essex branch, The Bull's Eye, Basildon, 18.45.

Microprocessors. P. Crowe, BCS, Bristol branch, St Vincent Rocks Hotel, Bristol, 19.15.

Stark control. Dr M. J. Walsh, BCS, Belfast branch, Windsor Hotel, Belfast, 18.30.

Experience with a commercial database. G. Anderson, BCS, Edinburgh branch, Mountbatten Bldg, Harriet Watt University, Edinburgh, 17.30.

SPECIALLY FOR CHILDREN

Introduction to Science

SCIENCE can be as exciting and romantic as fantasy - this is the central idea of a series of plays for children aged 7-11 from the Molecule Club, an offshoot of London's Mermade Theatre.

The latest of the plays, *Poles Apart*, is the story of two alien men's escape from a volcano eruption, during which they learn some basic facts about magnetism and electricity. *Poles Apart* will be on tour in South of England and Wales this spring.

For further details phone Suzanne Skupinski at the Mermade, 01-238 9821.

Schools quiz on computing

SIXTEEN Merseyside schools have entered for an inter-schools quiz on computing organised by the BCS Merseyside branch in conjunction with the Merseyside Computer Education Group. The four rounds will take place in January, February, March and April.

Recruitment firm branches out

THE controlling company of 53 Specialist Computer Recruiters is branching out into the general field.

Peter Rigby and Associates has acquired three specialist agencies. Angela Chapman Personnel in Liverpool, Clive Court Employment Agency in Birmingham and City Girls Employment Office in the City of London, and plans to form a second national chain.

The group aims to start a general recruitment consultancy in July, based in London's West End during the first quarter of 1978.

LiveWire Soup

I'VE ASKED CHRIS MERLIN FOR A FUTURE VIEW OF THE COMING YEAR!

I'M NOT SURE IF I SHOULD PREDICT...

"A LIGHTNING STRIKE BY SMALL OUTPUT BUFFERS."

"DR SMALL OUTPUT BUFFERS: STRIKE BY LIGHTNING!"

"DR SMALL OUTPUT BUFFERS: STRIKE BY LIGHTNING!"

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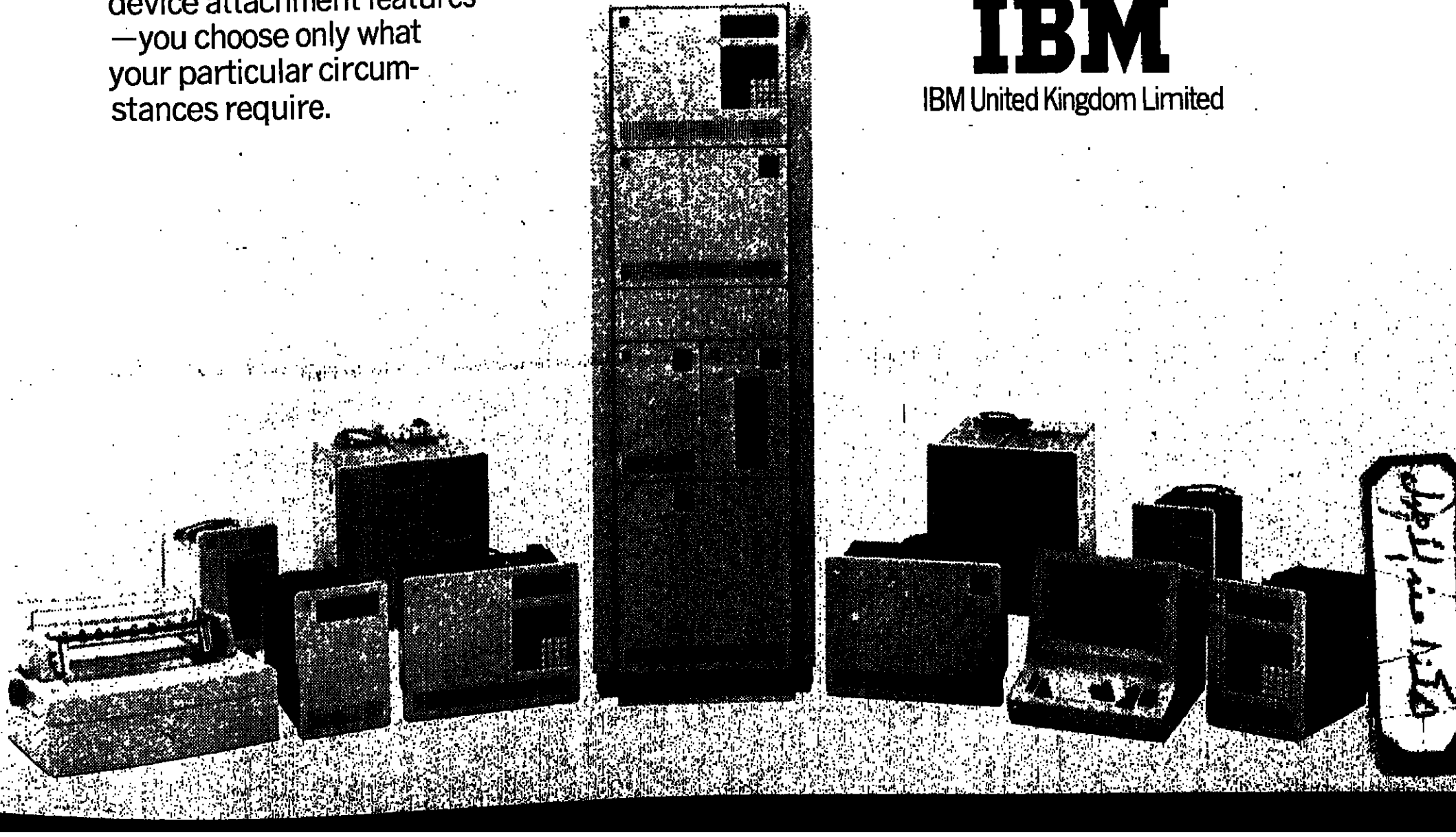
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quickly it can be installed and working.

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How to Organise and Control Structured Programming Teams 27 Feb - 3 Mar London
Tools and Techniques for the Software Development Manager 15-17 Feb London
How to Improve Systems Development Productivity 20-22 Feb London

Real Time/Data Communications
Fundamentals of Teleprocessing Systems 6-10 Feb London
System Design for Teleprocessing 13-15 Feb London
Data Communications Networks 13-15 Feb London
Data Communications Software 13-15 Feb London
Advanced Real Time Software Workshop 27 Feb - 3 Mar London
Distributed Processing Systems 21-23 Feb London

Structured Design
Jackson Design Methodology: Training Workshop 20 Feb - 3 Mar London
Data Base
Data Base Design and Administration Workshop 6-10 Feb London
Performance Evaluation and Optimisation of On-Line Data Base Systems 13-15 Feb London
Data Base Integrity and Recovery Techniques 27 Feb - 1 Mar London
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Minicomputers and Microcomputers
Minicomputer Systems: Assessment and Application 14-16 Feb London
Minicomputer Systems: Evaluation and Selection 21-23 Feb London
Microcomputers for Commercial Real Time 28 Feb - 3 Mar London
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MICRO NEWS

Edited by Martin Banks

Single chip system trendsetter of year

IF trends in microcomputing can be said to have any significance, the most interesting developments of the past year have occurred in the single chip "system" area. To be sure, some of the hardware will not be available until next year, but recent announcements from Intel, Zilog and Motorola have all pointed to the route that the micro manufacturers are planning to follow.

To a large extent, the significance of the announcement of the Intel 8021, the Zilog Z-8 and Motorola 6801 lies not in the products themselves, but in what they represent as a technological trend. All are being aimed at applications where a relatively small amount of memory coupled with some I/O capability can be employed with the minimum of extraneous design activity on the part of the user. One chip and just a few additional components can be engineered into a working system with a minimum of expertise.

The applications themselves, certainly in computing terms, do not yet represent a dynamic advance, coming as they do in the form of process control operations and slightly less than morose terminals. But as a level of

NS data capture system

CLAIMED to be the first single chip data acquisition system, the National Semiconductor ADC0816 can be used to replace up to £100 worth of analogue to digital conversion equipment in a variety of applications.

Included on the chip are an 8-bit analogue to digital converter with Tri-State latched outputs, a 16-channel expandable multiplexer with address

input latches and provision for handling external signal conditioning.

Housed in a 40-pin package, the device can perform a conversion in 50 microseconds, and is particularly suited to medical instruments, process control, industrial control and machine control. In quantities of 100, the device is priced at £12.95.

Courses on Rockwell 6500

FOLLOWING the decision of Rockwell to manufacture the 6500 family of microprocessors designed by MOS Technology, its UK distributor, Pelco Electronics has instituted a series of three-day courses covering the basic theory and hardware of the device.

The main aim of the course will be to initiate participants into the practical use of the main 6500 family design aids, the KIM-1 and System 65.

One course will be run each month during 1978, with a maximum of six engineers per course.

The fee will be £85 per person. Further information can be obtained from Pelco at Enterprise House, 83/85 Western Road, Hove, Sussex BN 3 1JB.

Memories stocked

OFF the shelf delivery of Intel add-on memory systems for Digital Equipment LSI-11 computers can now be obtained from Rapid Recall.

Typical of the systems to be stocked is the In-1811, which is said to offer better performance than its DEC counterpart for less money and in less space.

integration over current products, and with a price reduction of traditional semiconductor proportions, they represent a significant step down the road towards the real single chip computer system.

The introduction of these products must also be considered in relation to the other major developments from these three companies, the Intel 8086, Zilog Z-8000 and the Motorola MACS. All are 16-bit processors with a computing power that will be equivalent to systems from the Digital Equipment PDP-11 range. They represent the semiconductor companies' continued push for greater integration and computing power. They will be expensive and require considerable initial expertise in their implementation. They will, however, follow and extend the pattern now being set by the 8021, Z-8 and 6801.

Perhaps the other most significant event of the past year has occurred in the related area of semiconductor memory devices. The manufacturers, dominated as they are by the requirement of maintaining high volume production, have established a long tradition of price attrition as a means of expanding the available market for a

product. With 4K static RAMs however, the market itself preempted the manufacturer's rate of price cuts, and orders flooded in based on the premise that the price would be right come delivery day.

The volume of orders for the part has, however, far exceeded the rate at which the part can be produced. It will now be some time before orders are fulfilled and the price becomes "right".

Finally, on a different tack from the industry proper, Lynx Electronics made the potentially significant discovery that a UK hobby computer market may exist after all. At its Wembley seminar, it sold 98 Nascom 1 computer kits, bringing the total sold to over 300 (CW, December 8). Virtually all were bought sight unseen, even though the price tag is about £200. Who said the British were a cautious race?

Cosmac VIP hobby computer kit

ANOTHER company about to enter the UK hobby computer market is RCA Solid State with its Cosmac VIP computer kit. Based on the company's CMOS-manufactured CD 1802 processor, the kits are currently being modified to work directly with PAL standard televisions.

Priced in the US at \$275, the kit consists of a single printed circuit board on which are mounted 2K bytes of RAM, 812 bytes of ROM, a hexadecimal keyboard, 100 byte per second cassette interface and power supply.

The ROM is utilised to hold the operating system, which provides such facilities as direct interfacing with a TV, simplified loading of RAM, data transfer from RAM to cassette and single step debugging. Easy expandability has been made a prime feature of the kit, and an expansion board is available that can accommodate up to 32K bytes of additional RAM, plus a further 19 input/output lines.



Visitors to the Plessey stand, at Systems '77 Munich, discussing the Miproc 16-AS high speed microcomputer system with Alan Senior (left), Microsystems sales manager in Germany.

Impressive debut

THE Plessey Miproc 16-AS microcomputer system, which made its public debut in Germany at Systems '77, has found a ready market with Krautkramer GmbH, a Cologne-based manufacturer of ultrasonic non-destructive testing equipment.

Six systems have been sold to the company, where they will be used as high speed controllers in automatic test equipment used in the production of high grade

stainless steel tubing. The tubing has to be tested for internal and external diameters, plus wall thickness, and the testing has to take place while the tube is rotating at 2000 rpm and being fed through the tester at one metre per second.

Plessey has also sold nine systems to Quaye DV, a specialist systems house located in Kaarst, near Düsseldorf. These will be used in process control.

OP SPOT

TO carry out his function effectively, an operations manager needs to be familiar with many subjects. He plays the role of a psychologist when dealing with personnel or recruiting new staff; that of an economist when considering his DP budget for the coming year; and must be able to communicate with programmers and engineers regarding technical matters. Add to all this the fact that he must be aware of the problems of users and it becomes clear that his task is varied and complicated.

Firstly, the DP budget concerns capital expenditure such as the purchase of new peripherals, core storage, VDUs and ancillary equipment. In this regard the operations manager should have an up-to-date knowledge of the equipment available, the relative costs and its worth to his installation.

Secondly, it involves staff salaries and the manner in which they are calculated. Here he is restricted by the manner in which the company awards pay rises, by government legislation, and possibly by the trade union to which his operators belong. Ideally, increments should be related directly to the true value of each operator in the installation. They should be linked to staff appraisals taking place every three or six

The manager—man for all seasons

months and the operations manager should consult the shift-leaders when putting his views to the DPM.

In this context, each operator should be told how well, or badly, he is doing. If the respect of his staff is vital to an operations manager then he should try to gain it. In this matter it is important that he does not become a mouthpiece of his DPM's views — and also that he does not socialise with his staff too often.

After defining installation procedures and regulations, he must ensure that his directives are followed fully by the operators and must support his staff, should disputes with related departments occur.

At many installations it is a rule that only operators, engineers and systems programmers, when requiring "hands-on" time, are allowed to enter the computer room. It is important that the operations manager does not alter this rule under any circumstances.

This is particularly annoying and disheartening for the console operator who has taken

the time and trouble to plan the order of his workload. Such planning usually involves the setting-up of job queues and the mounting of discs.

While his foremost consideration must be the service accorded to users, he must not allow them to dictate either to himself or to his staff. For example, if a member of payroll staff has to wait for his output longer than usual due to a printer being out of service, the operations manager should inform the person of the cause of the delay and not allow the work schedule to be disrupted, except in extreme circumstances.

Although remaining detached to a certain extent in socialising with staff, he must be able to communicate with them on all matters regarding work. This balance between detachment and communication is difficult to achieve and maintain, but is important.

A good opportunity to relate to personnel occurs at staff meetings, but these are often restricted to senior operators, shift-leaders and the opera-

tions manager.

An excellent idea is to allow a different member of each shift to attend the meeting on each occasion, whether they be a senior operator, operator or trainee. This enables all staff to get a much broader view of the running of the installation, and a greater awareness of the problems to be overcome. Such a scheme leads to more interest on behalf of the staff, because apathy can arise when operators lack encouragement.

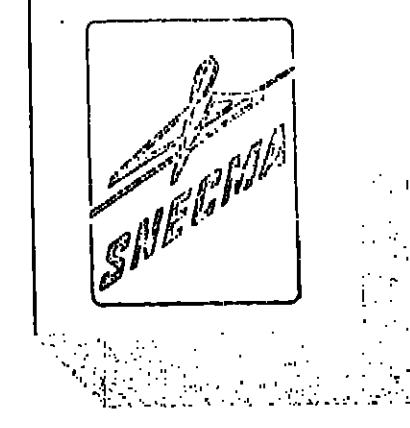
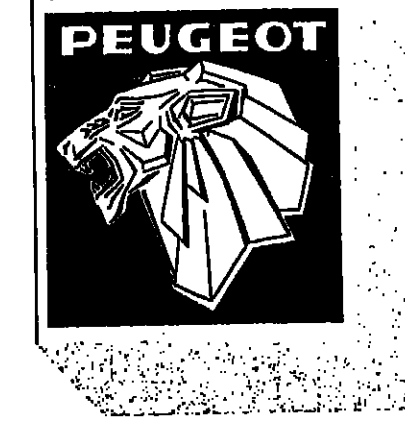
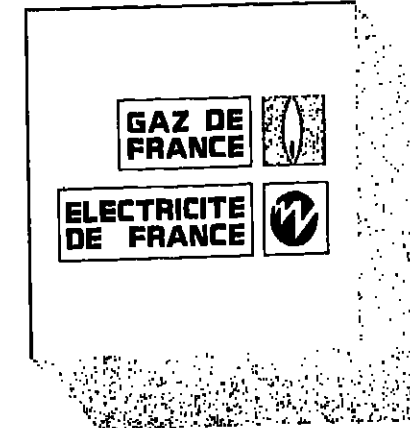
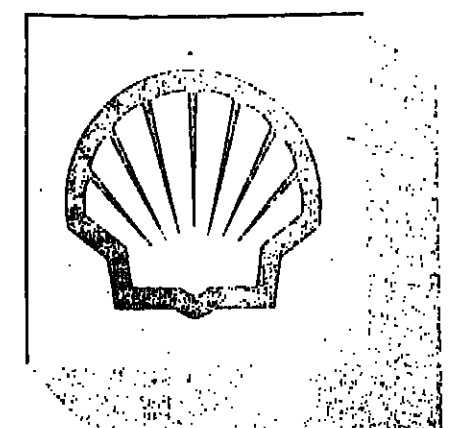
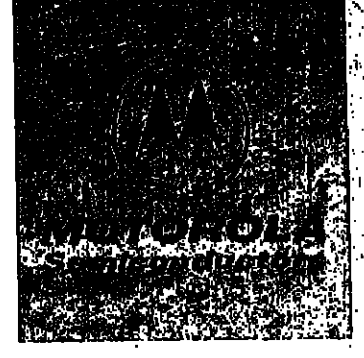
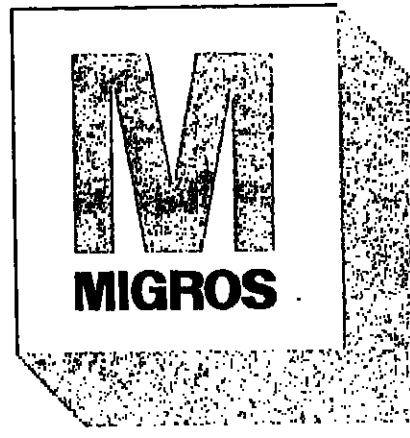
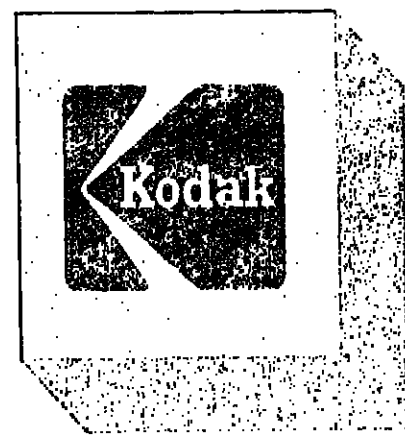
The manager must be able to accept constructive criticism from his staff and, in the appropriate situation, act upon it. Operators regularly have good ideas about the manner in which the computer room is organised and run, but are rarely given encouragement. When talking to operators and discussing their abilities and shortcomings with shift-leaders, it is essential that the manager gets an accurate assessment which will help him to ensure that each shift has a balanced staff.

Closely akin to this is the recruitment of staff, and the operations manager must be able to assess a candidate and consider if he will fit into the installation.

The operations manager has a great deal of responsibility to his company, his staff, and above all to himself.

By Bernard Allen

They all talk the same language.



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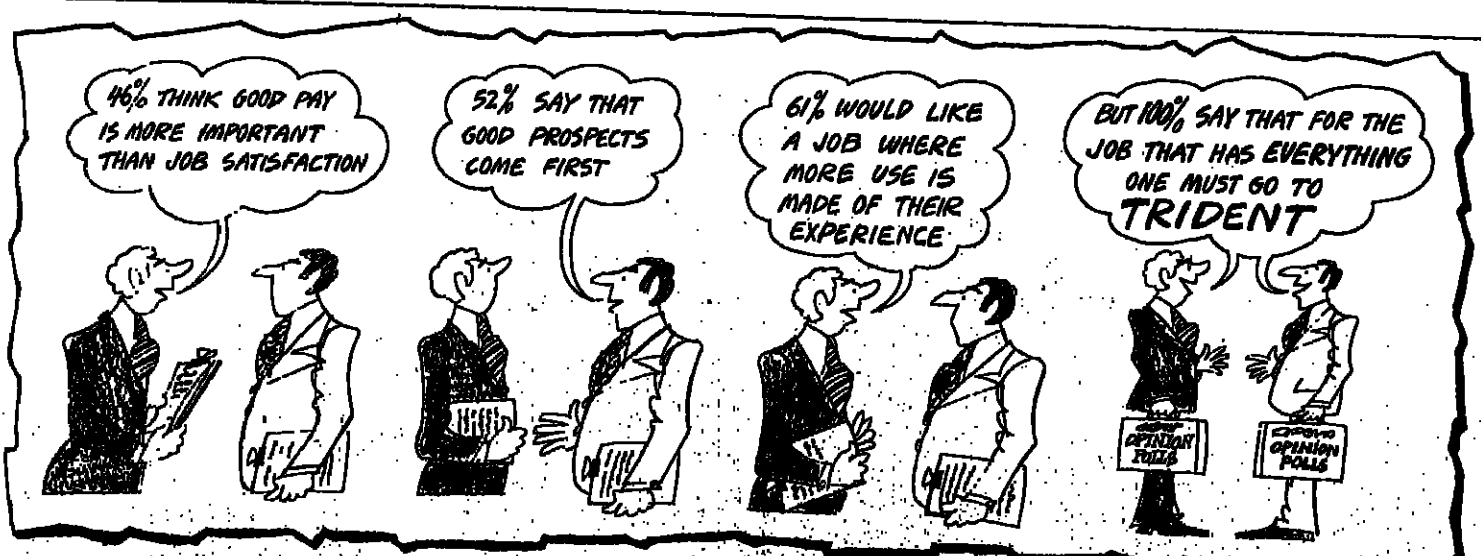
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Poet-tree

Ton

Speed
Is exhilarating when
A cow in the road around the corner
Means death.

Power
Is relentless when
A cow in the road around the corner
Means death.

Time
Cannot exist when
A cow in the road around the corner
Means death.

Why be afraid of
Death when
Death
Is just a
Cow in the road around the corner?

Tim Palmer

EPSS—
S.W.A.L.K.

I addressed the packet
with binary coded,
loving care —
for someone,
somewhere
was waiting
for a message from me

I ordered (InconSequentially)
each bit
of each byte
to form for you
a love letter true
(a heartfelt ditty
written to standards set
by the CCITT)

and although,
like eggs on toast,
your reply was scrambled
in the electronic post,
it was no snag
to unravel:
I YOVE LOU (anag)

Oh Yes,
keeping in touch is so nice
with the Post Office's
Experimental
Packet Switching Service

Malcolm Peltu

19th Nervous
JCL STATEMENT

It really doesn't matter, you know, it's
Just a game it's
Not important. Not compared with
Whether Palace won on Saturday or
If Rodney will make it to number
One next week.
The world won't come to an
End it
Won't prevent the Thames flooding most of
Central
London before the
Barrier is built, won't even
Affect the supply of crumpets, stop
The sparrows switching on in Leicester Square
at
Four pm precisely. And that pretty typist in
Personnel will still
Smile or
Not smile to-
morrow as the case may be whether I
BM puts M
VS on the E-series or
Not.

Tim Palmer

Big O.S. Man

He'd been a trusted
program member
Of the largest
operating system
In the world,
ever since the early
illicit bootstrapping days

but when he failed to update
his store protection dues
The Supervisor ordered
his privilege bits unset
and he was placed
on The Queue Minder'd list:

soon to be erased

Malcolm Peltu

Tidying up

It's been a long shift since the year began,
And there is much to shed and shred;
No time now to try to feed
Those valid statements still unfed
Into the silent terminal,
Nor yet to follow up instead
Ideas, however germinal.

I've checked the logs, the discs, the tapes,
Updated every manual in the place:
Slave units' shackles briefly loosed
And every bug that I could trace
Is ironed out;
Downtime approaches at a petty pace—
Yet still I doubt...

I fear that when next year's shift starts
All this year's private mess will lie
Swept beneath the mind's false floor,
Deceiving no one but the eye
Of the beholder;
No fresh new start, then? But I—
Shall be one year older.

Note for myself for New Year's Day:
I've charted the flow of my life so far,
Diverted the course of some endless loops;
Now document just how things are,
And note this fact:
Wherever I go, however far,
Starts with this act:

Begin

Don Mitchell

Really Basic

BASICally speaking
you are the API
of my core:
the program body
I must adore

You are the end
to my each begin
and your smile makes
even the ugliest bug grin

To your each sweet CALL
I must OBEY,
looping round
your love routine,
like a spider
with its prey

Without you I'd ABEND,
for I am just a variable
for a constant called you;
and I've nowhere else
to GO TO

Malcolm Peltu

The Watcher

The Watcher stands
Atop the hill,
Witness to the silent mill,

Relics and ruins are
His to see, all that
Was, and ceased to be.

Time honoured symbols
Of Man remain,
Jutting above Watcher's humble
Plane,
He has no smile,
He has no mirth,
He has no birth.

The Watcher stands
Atop the hill,
Witness to the silent mill,
A river runs close,
Winding away,
He cares but little,
It is always there the
Next day.

Buildings echo with the failings of Man,
Down, along the streets they ran.

With a fiery blast,
The sun disappears,
Another day gone, or is it a year?

That too remains, a thing of
That night which holds
Fireflies,
Twinkling so bright.

Earth is born,
A star looms above,
Man was created,
Created with love.
Now that is gone,
Earth is alone,
Man has fled his wondrous,
Faithful, abode.

The Watcher stands,
Atop the hill,
Witness to the silent
Mill,
Relics and ruins are
His to see,
All that was and ceased to be.

Watcher, you with mortal eyes,
Can your stone body show
Earthly surprise?
You were the beginning,
A beginning to the end,
Fiery angel,
Did you have to descend?

Robin Webster

CHESSLAB CHRISTMAS QUIZ

End (of year) games...

To combat the end-of-year fatigue and lassitude which may already have set in, Chesslab this week presents 20 questions guaranteed to stir the system (human, or perhaps even machine) into action. The quiz was compiled by Danny Kopec and Donald Michie of Edinburgh University, and Michael Clarke of Queen Mary College, London. Answers appear on page 39.

A. The six king-pawn-king-pawn studies given below were composed with computer assistance. Find White's move in each case.



A1 White to draw



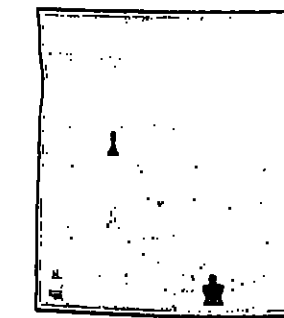
A2 White to win



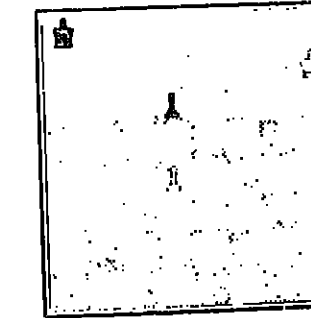
A3 White to draw



A4 White to win



A5 White to draw

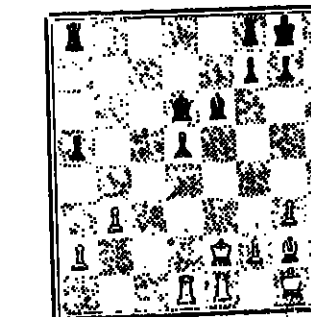


A6 White to win

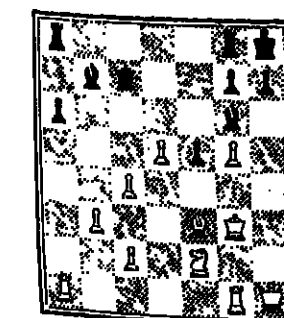
B. In each of the three position-pairs which follow, one is taken from a computer chess tournament and one from a Bobby Fischer game. Which is the Fischer game in each case?



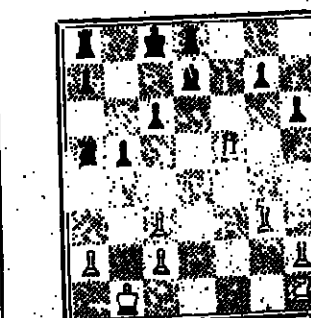
B1 (1)



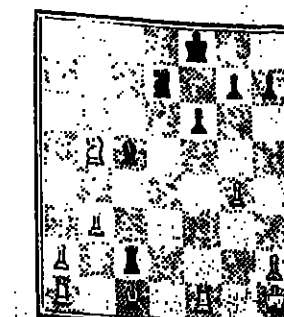
B1 (2)



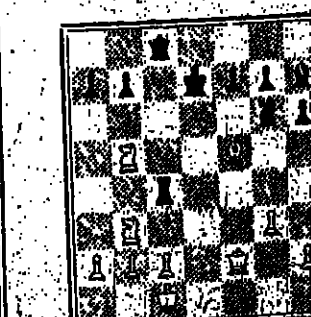
B2 (1)



B2 (2)

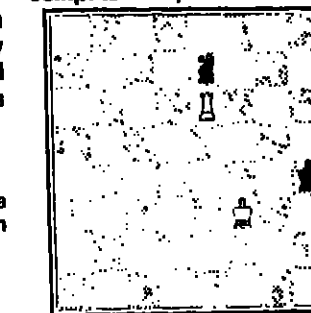


B3 (1)

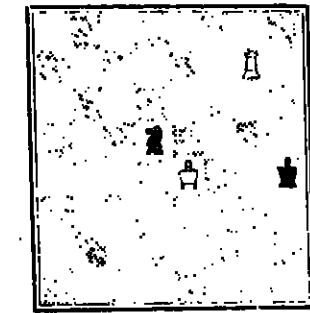


B3 (2)

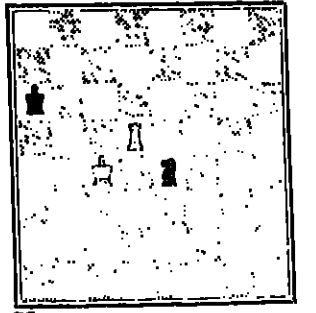
C. The following studies of the defence of king and knight against king and rook emerged from computer analyses. Black is to move and draw; find his only correct move in each case.



C1



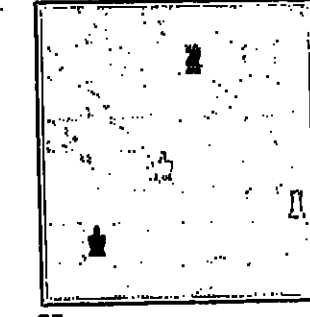
C2



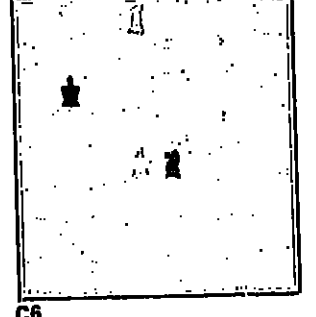
C3



C4



C5



C6

D. Who said:

D1. "It is hopeless to try to make a machine play perfect chess?"

D2. "In ten years a computer program will be World Chess Champion?"

D3. "There is no reason why a program based on such 'type positions' could not be constructed. This would require, however, a rather formidable analysis of the game?"

D4. "A real success — the production of great games and not just the avoidance of blunders — in the attempt to mechanise chess must at the very least teach us a good deal about the nature of thought?"

D5. "Chess problems are the hymn-tunes of mathematics?"

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Al Barnett
Tony Vann
Terry Lawn

When Elvis died

Where were you when Elvis Presley died?
I was somewhere back in the Sixties
in a Chelsea spaghetti factory with you.

IT IS ELEVEN O'CLOCK
the very loudspeaker blared
TIME FOR THE NEWS.
ELVIS PRESLEY HAS DIED.

We laughed, it was so unreal.
We had no time for the news
that Elvis had died.

But then the wake began
and it was heartbreaking hotels
all through the night

"It's amazing," I said.
"The end of an era, the start of old age."
"Rubbish," you replied
"It doesn't matter at all.
He never really lived,
so he never really died."

Angry, I turned on you,
spaghetti tentacles flaring from my mouth,
"Elvis has died, Gods shouldn't die."

Later, Groucho went too.
"Time wounds all heels," he once quipped.
Only this time it was fatal.

But you were right, of course.
They both live in eternal dream machines.

Elvis throbbed in wax grooves,
Groucho crouch-walking
across a million screens.

And me?
I'm afraid I'm still lost
somewhere back in the Sixties.
Stuck fast in trend-setting glue.

With no wax in which to groove,
no celluloid to keep me warm.

Malcolm Peltu

Appointments

LONDON
Steven Bass 01-281 8174
Mark Williams 01-281 8019
John Graham 01-281 8082
Anne Wilson 01-281 8088
Jill Andrews 01-281 8484

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Plug-compatible Sigmas through design stages

THE plug-compatible Sigma 9 and Sigma 11 processors under development at Telefile are through their design stages. The Sigma 9 should be available in the first quarter of 1979, with the Sigma 11 a little later.

Compared with the Sigma 9 built by the defunct Xerox Corp, the Telefile Sigma 9 will have a number of enhancements, notably a floating point processor, according to Con Driscoll, Telefile's European managing

director. "We will begin taking letters of intent for the Sigma 9 at the beginning of next year," he told Computer Weekly.

The planned processors, which will offer Xerox Sigma users an alternative to moving across to Honeywell's Level 68 running under the planned CP-6 operating system were first revealed in the spring (CW, March 31).

Telefile is taking over the lease of the

former CRC premises at Slough, and is buying Atkins Computing's old Sigma 7. "We have a Sigma 8, too, and both machines will be used as test-beds for our add-on memories, printers and so forth. We are also planning to manufacture small disc controllers there. The machines will probably be configured into full systems and sold at some stage and we will pick up other used machines," said Driscoll.

Online booking system for shipping firm

AN online passenger booking system for the British and Irish Steam Packet Co is to be implemented by Leasco Software Ireland. The system will be based on twin Digital Equipment PDP11/70s in Dublin, linked to 50 VDUs in the main offices of the company in the UK and Ireland.

Hardware for the system, valued at £520,000, includes £120,000 for data communications equipment, while software development for the project will cost £200,000.

Due to go live in 1979, the service will process reservations for passengers, cars, and berths. The computer will also handle part of the firm's freight operations.

MDS wins \$10m Series 21 business

THE product on which MDS is staking its future, the Series 21 data entry/processing terminal cluster (CW, May 13), has provided the company with about \$10 million worth of business in Europe in 1977. Nearly 600 systems have been ordered or installed by customers. They include Trust House Forte and the Wellcome Foundation in the UK.

Managing director of MDS in the UK, Ray Skinner, says that many of the Series 21 orders placed are for one or two units and could be followed up by multiple orders. Trust House

Forte, for example, has one Series 21 system at its catering division's headquarters at Cheam, Surrey, but plans to install several more at other locations.

About 30 systems have been shipped in the UK to date, and Skinner points out that UK sales should be given a boost early in 1978 with the introduction of an ICL 7502/7503 compatible

version of the Series 21.

Europe accounted for about \$35 million of the \$72 million turnover notched up by MDS worldwide in the first six months, ended October 31, of its current financial year. But about 60% of the turnover came from rentals on installed equipment as opposed to sales, and MDS is not prepared to reveal the value of new contracts picked up for its older products, of which the MDS 2400 key-to-disc system is by far the most important.

Some of the latest contracts for MDS 2400 systems include two from the shipping industry. The Mersey Docks and Harbour Company has installed a 2400 to capture payroll and other data for processing on its IBM 370/135 mainframes, while Atlantic Container Line, the Southampton-based international consortium, has ordered a 2400 system and five MDS 6403 communicating data recorders to act as backup to its online network, SPEED (CW, February 10).



Ray Skinner

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Learning from home terminal

I SHOULD like to comment on the report quoting Earl Joseph's view on the future (CW, November 24).

I am deeply disturbed that anyone should seriously consider that learning from a terminal at home is a satisfactory substitute for education at school. The learning of a subject is only one of a number of functions taught at school and very probably not the most important one. When did you last translate Latin prose?

The need for personal and collective discipline, interacting

with others in a social group and physical education are but a few necessary aspects unlikely to be learned from a terminal. On an even more basic level, what about working Mums?

I hold no brief for teachers, and there may well be a place for terminals to help them, but I do have three school-age children. This suggestion by Earl Joseph seems a typical example of technology looking for a problem instead of studying the "whole task".

J. A. B. THOMPSON
Riding Mill,
Northumberland.

CAL national centre

I WOULD like to correct an impression that may have been given in the article, Project could lead to CAL Centre (CW, November 10).

While it is true that the Cedar project at Imperial College is one of several information services which will be disseminating information about computer assisted learning, Imperial College is not really in a position to take over from the National Development Programme in Computer Assisted Learning as a national centre.

The national centre for computer assisted learning aftercare, funded by the government following the closure of the NDCAL, in December, will be based at the Council for Educational Technology for the UK, 3 Devonshire Street, London W1N 2BA. Tel: 01-636 1186.

The council is establishing a number of program exchange schemes in different parts of the country and in different subject areas, based on the work of the

national programme, and is discussing other initiatives to encourage and support Computer Assisted Learning and Computer Managed Learning in collaboration with established organisations in the field of computing and education.

MRS INGRID TOYE
Programme Organiser (CAL)
Council for Educational
Technology,
London.

Prediction model

I HAVE worked out a computer model to predict sales (within 1-2%) for the ICL/Financial Times National Management Game and would be pleased to participate with any local team entered. This would help toward my PhD thesis on cybernetics.

11 Trian Avenue,
Barnet, London NW4 6LH

How stars are born

COMPUTER-AIDED studies of instellar gas clouds in the constellation of Orion have produced evidence supporting a theory that stars are being formed at many points throughout the cloud as it collapses.

An analysis of the data obtained appears in the November issue of the Astrophysical Journal, and authors of the article are Dr Frederick Follen, of the Department of Physics and Astronomy, University of South Florida, Dr Humberto Gerola, of the IBM Thomas J. Watson Research Centre, and Dr Sabatino Sofia of the National Aeronautics and Space Administration.

Conventional theory holds that stars can be born only in the dense centre of a gas or dust cloud, where matter is

packed relatively densely. The new information, however, suggests that in the case of Orion, at least, stars are being born in the less dense areas as the cloud collapses to a common centre.

The technique used by the researchers was to analyse the movements of 140 candidate stars on an IBM 360/85 at Southern Florida. The movements were obtained from two groups of photographic plates about 40 years apart. The first set was taken between 1903 and 1926 at five different observatories, and the second batch between 1968 and 1974.

In an attempt to find the process that enables such stars to form, Dr Gerola is using an IBM 370/168 at the Watson Research Centre, to simulate various chemical reactions that may occur in the cloud.

Call for a Ministry of Computing

• From front page

The main problem at present, according to the SCPS, was that "several departments or ministries" had developed, and that this led to a "lack of overall control and supervision, the likely result being the inefficient use of resources within the Civil Service."

It calls for "a separate authority with executive powers to be set up to control, co-ordinate and supervise the creation, execution and operation of major computer projects

within the Service, both existing and projected."

Also, because of higher pay in the private sector, Christie says that there is a current turnover of 20% a year at basic programmer level, with losses also occurring of senior and chief programmers.

To rectify this, immediate pay increases of more than £1,000 a year should be made. The major obstacle here, however, was "the rigid manner in which the government's pay policy was being applied in the public sector, while being largely ignored in the private sector."

Trade or profession—actions louder than words

DP PERSONNEL should be more concerned with acting in a professional manner than being regarded as members of a profession, said Ted Cluff, vice-chairman of the DPMA. He was addressing a meeting of the BCS operations specialist group last week considering whether operations should be regarded as a trade or profession.

"What really matters is how we as individuals are regarded by others — whether they believe it to be self-evident that we are behaving in a professional manner," he said.

Defining professionalism

DISC — an acronym for Dedication, Integrity, Sincerity and Competence.

The other speaker, Dick Waller, of CAP, said, "In DP, people join as operators or programmers and in two years they are on £5,000 a year. From then on their income in real terms goes down because of family commitments and inflation until they retire — a sort of reversed apprenticeship."

He concluded, "Are operations a trade or profession? This is not a question I can answer. But I affirm very strongly that senior operations staff should be professional."

Merry Christmas

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We are not sending cards this Christmas, but we do want to wish our many clients and friends in the computer industry a very merry Christmas, so here it is:

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This bumper issue of our popular small-ads feature is the biggest this year. We like to think that this reflects its effectiveness in selling goods and services for our advertisers — we have certainly had many favourable comments from our readers.

Computer Weekly's advertising staff would like to take this opportunity of thanking all Market Place advertisers for their wonderful support during 1977 and wish them and our readers a

MERRY CHRISTMAS AND A HAPPY NEW YEAR

For further information on the availability of space and special positions within the Market Place feature for 1978

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Appointments

Systems Project Leaders and Analyst Programmers

The Company

The Institution of Electrical Engineers is a non-profit making professional body whose main funding is from subscriptions and profits from commercial operations including INSPEC International Information Service for the Physics, Engineering and Computer Community.

In 1988 it became necessary to install a computer system to provide a database for the well established abstracts journals could be produced.

INSPEC currently uses an ICL 1902T computer with 64K words core, 8 tape decks, 3 EDS 80's, computer printer, card reader and 2 printers. In the foreseeable future this configuration will be up-graded to provide an on-line service utilising a high level language for INSPEC and external customers.

Magnetic tape services are now provided for companies and universities with computer based information services. This year INSPEC will provide over 150,000 abstracts. The journals and the database are distributed world-wide and the information is available on-line through the European Space Agency and the Lockheed Dialog Service based in the United States. Other INSPEC services include selective dissemination of information, key abstracts publications, and company current awareness services. The computer systems are also used to produce publications for external users including encyclopaedias and lists of members of professional associations.

The Job

Based at Hitchin in Hertfordshire the Systems Project Leaders will report to the Systems Controller and will be responsible for providing systems for the production of the database. This will involve dealing with the user department (or external client) to establish requirements.

producing specifications of systems, costing and system (both development and running costs) and the production of system specifications for programming.

He or she will also write and test programs implementing the system, provide documentation on the system for the user, the data control section, and produce internal documentation to assist in modification of the system. Projects are handled individually or with a supporting team.

Additionally Analysts Programmers are required who will be offering less qualifications and experience than the Systems Project Leaders. Programmers who wish to move into systems analysis work may also be suitable for these posts.

Candidates

The Candidates must have experience of an assembly language, preferably PLAN. Experience of text file maintenance and computer type-setting systems would be an added attraction.

Rewards

A salary in the range £5400-£5700 will be paid to the Systems Project Leaders, and up to £6000 for Analyst Programmers. There is a contributory pension scheme and free life insurance. The Institution operates flexible working hours, and both posts carry holiday entitlement of 20 days.

Relocation expenses are negotiable and assistance with housing on a temporary basis may also be available.
Replies should be addressed to John Carmichael, Systems Controller, Institution of Electrical Engineers, Station House, Nightingale Road, Hitchin, Herts.

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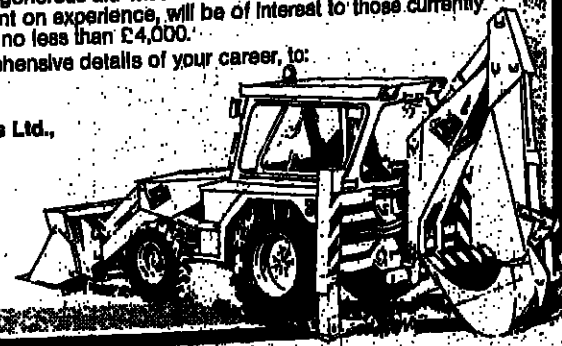
A review of all group systems requirements is currently underway and a group systems plan will be produced in the New Year. The intention is to replace our existing Burroughs B3600 300kb computer, currently operating in a database, and real time teleprocessing environment, with new hardware which could involve distributive processing. We now seek Analysts to implement and develop our new generation of systems.

The major areas are:
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**FURTHER APPOINTMENTS
APPEAR ON PAGES
16 and 17**

The Knight bumper Computer Quiz.

A case of wine must be won!

As it is Christmas, we thought we'd give you a break from our usual list of contracts (although we still have plenty on our books). Instead, we've devised a little quiz. And we're inviting you, gentle reader, to take part.

When you've found the answers, cut out the whole ad and send it to us. If yours is the first correct set of answers we open, we'll send you a case of wine to the value of £20. If it isn't, we've plenty of consolation prizes. Like a new contract.

Section 1. Ancient History

1. What and when was Leo?
2. By whom is the computer generally reckoned to have been invented, and when?
3. What was the first application of electronic computers in this country?

Answer

Answer

Answer

Section 2. Stretch your brainpower

Lateral Thinking Problem.
A student owed a huge sum of money to a college bully. The bully, fancying the student's girlfriend, proposed a bargain. He told them that he would put a black pebble and a white pebble into an empty pencil-case and then the girl would have to pick out one of the pebbles.

The black pebble would mean that the debt was cancelled and she would become his girlfriend. The white pebble would mean that the debt was cancelled

and she could stay with her boyfriend. They were standing on a pebble-strewn path and as the bully bent down to pick up the pebble, the girl noticed that he had picked up two black pebbles and put them into the pencil-case. Afraid of pointing out his dishonesty, what should she do?

Answer

Section 3. Cunning computations

Working from the left, multiply the third whole number by the fourth decimal.

0.6, 3, 9, 0.7, 0.1, 0.8, 2, 4, 0.5

Find the number which completes the series
7, 9, 40, 74, 1526

Which one of the following numbers does not belong with the others?

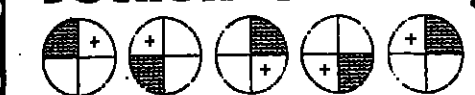
625, 361, 256, 197, 144

Answer

Answer

Answer

Section 4. Making shapes



a) Underline the odd-man out.

b) Underline the odd-man out.

Section 5. Keeping a clear head

Follow a series of complex instructions. Work carefully through the information given for each problem.

Do exactly what each sentence tells you to do:

1. If there are five colours in the rainbow ignore the next sentence. Write the first letter of the 11th word in the next sentence in the box. If pigs are pink and giraffes can fly, draw a cross inside the box. Draw a circle inside the box. If you still have not written anything in the box write the sum of the number of days in a week and the number of months in a year in it.

2. If London is a large City and 12-3 is less than 4, write the third letter in the sixth word of this sentence in the box. Write the letter 'H' in the box. If the third day after Sunday is Friday, and there are always 28 days in February ignore the next sentence. If the box is still empty write the second letter of the alphabet in it. If the box is not empty write the initials of Penelope Umpleby in it.

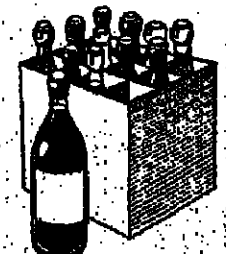
Easy, wasn't it? Now all you have to do is cut out this whole advertisement and send it to Anne Kingsley at the address below, to arrive not later than January 3rd, 1978.

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Middlesex up to £5,000
Interesting development work is offered by this well known manufacturing company, who have an IBM370 running CICS under DOS/VS. Vacancies are also available to junior programmers who are seeking good experience and career prospects.

Contact Mike Creamer

Customer Engineers

Midlands & N.W. c.£4,500 + OT plus car
Experienced Customer Engineers are required in the Midlands and North West area by an international minicomputer manufacturer. The main function is to provide a first line maintenance service of computer systems, but the successful candidates will be expected to assist in solving any of the clients problems.

Applicants should have at least two years in a field engineering environment. Preference will be given to those with formal qualifications such as ONC in Electronics.

Excellent opportunities to work in a professional organisation.

Contact Margaret Stevens

For further information on any of the above vacancies please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

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**MERRY CHRISTMAS and a prosperous New Year**

We would like to extend our best wishes to everyone for Christmas. In the New Year we wish you happiness, good fortune and success.

Regards from: Jim, Margaret and Mike

Europe — Holland Contracts 1978

C.C. B.V. based in Amsterdam have been asked by clients in Holland to state the following personnel to commence contract work early in 1978.

- Programmers IBM — Cobol — DOS and/or OS.
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me of these positions could lead to permanent appointments at high salaries commensurate with standards and costs of Holland.

phone Bill Seymour on 01-549 3212 for further information or direct to dy Ellis in Amsterdam (020) 461844.

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Applications giving the names of two referees should be sent by 8th January, 1978, to Miss Doreen Watson, Administrative Assistant (Appointments), University of Exeter, Exeter EX4 4QJ. Please quote reference no. 1/36/8447.

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Responsible for systems analysis, design, development, implementation and maintenance activities and liaison with programming, operations and user staff. Previous experience of systems work is essential.

Trainee Systems Analyst

To assist Systems Analysts as required. Some previous data processing or accounting experience is desirable but training will be given where appropriate.

Senior Programmer

Reports to the Systems & Programming Manager. Responsible for program design, specification, coding and testing. Will manage programming staff and liaise with systems and operations staff.

Programmers

Cobol and/or Assembler experience desirable but training will be provided where appropriate.

These vacancies offer the opportunity to join a professional and friendly team of development staff working to high standards. Some travel within the UK may be occasionally required. The Centre is easily accessible from the M4 motorway and the Western Region British Rail (Hayes & Harlington Station). Conditions of service include 51 days holiday per annum (including Bank Holidays), sickleave benefits, pension scheme and subsidised lunches.

Applicants are invited to contact Tim Bever, Systems & Programming Manager on 01-573 9045 or write to British Transport Docks Board, Computer Centre, Hayes Road, Southall, Middlesex.

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- OR
- ★ systems design experience coupled with a formal programming background, gained in an IBM environment.

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John 12/24

Systems Analysts O & M Analysts Programmers Solihull

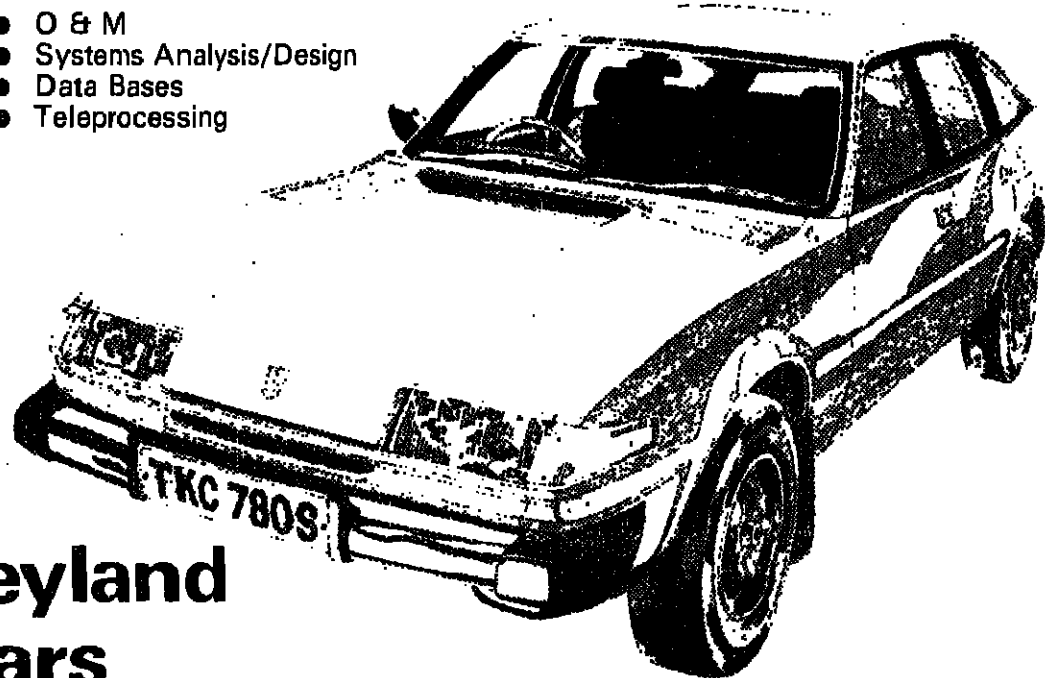
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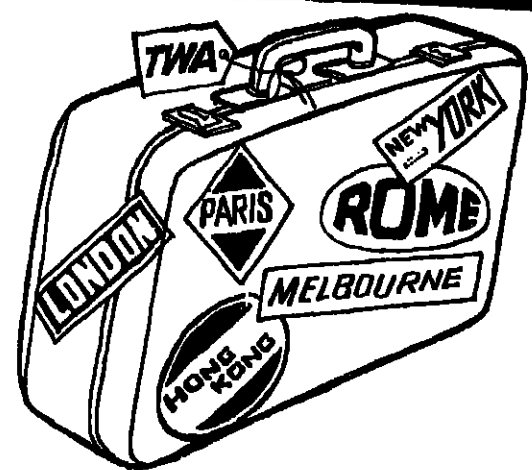
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REPLIES will be forwarded, direct unopened and in confidence to the client, unless addressed to our Security Manager listing companies to which they may not be sent. They should include comprehensive career details, not refer to previous correspondence with PA and quote the reference on the envelope.

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CCC would like to wish you a Merry Christmas and a Happy New Year.

Candidates considering furthering their career in the New Year should complete the application form below and return it to our London, Dublin or Amsterdam office.

For specific appointments see our advertisement in Computer Weekly on 5th January 1978

Application Form

SURNAME		FIRST NAME		MIDDLE NAME/S		LW50		HOME PHONE		OFFICE PHONE		FAX					
ADDRESS												CITY		COUNTRY			
AGE	SEX	NATIONALITY	COUNTRY OF BIRTH	MARITAL STATUS	NO. CHILDREN	WHICH OF THE FOLLOWING AREAS WOULD YOU PREFER TO WORK IN? (PLEASE TICK)											
DEGREE OR EQUIVALENT	CLASS	DATES	SUBJECT	UNIVERSITY													
OTHER ACADEMIC OR PROFESSIONAL QUALIFICATIONS												UNDERSTANDING IN PREFERENCE		SALARY		POSITION	
DP EDUCATION												LONDON		YES/NO		HARDWARE	
PRESENT EMPLOYMENT & RESPONSIBILITIES												IRELAND		YES/NO		OP. SYSTEM	
PRESENT SALARY												EUROPE		YES/NO		LANGUAGES	
DETAILS OF APPLICATIONS, RESPONSIBILITIES, PACKAGES, REASON FOR LEAVING ETC.												FROM		TO		NO. OF YEARS	
CONTINUE IF NECESSARY												COMPANIES & SUBSIDIARIES YOU DO NOT WISH US TO CONTACT		WOULD YOU CONSIDER CONTRACT EMPLOYMENT		STATE OF HEALTH	
FOREIGN LANGUAGES												MOBILITY: ARE YOU PREPARED TO WORK AWAY FROM HOME		WILL YOU RELOCATE		HOME OWNER	
CONTINUE IF NECESSARY												OUTLINE YOUR CAREER OBJECTIVES AND AREAS OF INTEREST		POSITION REQUIRED		SALARY EXPECTATION	
														YRS IN DP		PREVIOUS OCCUPATION	
																NOTICE REQUIRED	
																CAR OWNER	

Central Computing Consultants

Kingston: 44 Wood Street, Kingston upon Thames, Surrey. Telephone 01-549 3212 (24 hrs) Telex 27850
Dublin: Canberra House, 24 Lower Leeson Street, Dublin 2. Telephone 762170/762188/765692 Telex 30742
Amsterdam: Rijnlandstraat, Amsterdam 100. Telephone 461844 Telex 17338



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Applications are invited for a post in this department involved in the operational work of the computer unit. The post holder will be responsible for the operation of the computer unit and the maintenance of the data documentation. The post holder will be directly responsible to the Director of the Unit. Salary in the range £3009.478/6 per annum plus £450 p.a. London allowance which is paid in addition. Contact Mr. G. Dorman for application form 01-837 5411 ext. 449.

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At our Southampton Head Office we currently have a Honeywell 20/60 and a Burroughs 2700 machine and in April next year will be installing a B6700 with an on-line data base communications network.

Due to internal promotion we now require an operator, male or female, with one or two years' experience of Burroughs machines, preferably B6700, to work on a two shift basis: 08.00.16.00 and 15.30.23.30.

Salary will be up to £3464 per annum, depending on experience, plus 12½% shift allowance. Fringe benefits include 45p LV's, four weeks' holiday, contributory pension and personal sickness and accident schemes.

Please write or telephone for an application form to Mrs J. A. Chandler, Assistant Personnel Officer, ACT Services Limited, Richmond House, Tennyson Terrace, Southampton. Telephone Southampton 34433, ext. 3305.



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Systems Analysts

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RW50/2

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In addition two PL/1 Programmers are required. They need good experience on large scale IBM computers and in depth knowledge of design and development of database systems.

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RW50/3

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COMPUTER WEEKLY

presents a special one-day conference

Solving the computer staff problem

The Cafe Royal, Regent Street, London
Thursday, January 19th, 1978

Objectives:

To provide DP Managers and Personnel Officers of firms using computers with an overview of current practice in the recruitment of computer staff.

Shortage of computer staff is a problem which faces all computer users. A lack of qualified personnel is exacerbated by the mobility of computer people and their apparent loyalty to the job rather than the organisation.

In these circumstances recruiting suitable staff poses particular problems. How does the user set out to attract staff? How does he advertise effectively? How does he manage the selection process? Should he use a recruitment agency? Is the use of contract staff a viable solution?

The seminar will seek to answer these questions and to indicate what the computer user should do in order to formulate a successful recruitment policy.

Session 1

Introduction. The computer scene and computer people. Who are they? What are their characteristics? How are they motivated? Can supply ever catch up with demand?

Session 2

The user's viewpoint. Finding a way through the recruitment jungle. How can the employer user act effectively to obtain the staff he needs? How should he set about recruiting staff? What are the pitfalls? Planning staff recruitment and development rather than reacting to crisis situations.

Session 3

The role of the recruitment agency. Identifying 'weak' staff requirements. Specifying the post. Drawing the advertisement. Vetting the candidate. Drawing the use of the ability of specialist knowledge of the job market.

Session 4

The NCC Job Selection Service. Systems design is a key factor in the recruitment of computer staff. A successful recruitment policy for computer staff must take account of the specific requirements of the job market.

Session 5

How to attract computer staff. Advertising in the computer press. The computer user's role in the recruitment process. The computer user's role in the recruitment process.

Session 6

The DP Manager. Picking the right man for the most responsible job in the computer dept. Fewer in number than other categories of computer staff good DP Managers are worth their weight in gold. The post demands a more generalist, less specialist approach than programming and systems analysis. Spotting those with potential requires a keen eye and a wide ranging knowledge of the business. Filling this key post is a task for a reputable recruitment bureau.

Session 7

Contract Staff. Increasingly contract staff are being used to overcome work bottlenecks, help in conversion programmes, etc. as well as compensating for variations in staff availability due to holiday and sickness. Now the use of contract staff is such a well-established feature of the computer scene that it merits inclusion in an overall appraisal of the recruitment problem.

Session 8

Managing standards in the recruitment function. The CSA has established a recruitment division. What are its aims and achievements? A consideration of the code of conduct.

The speakers will include Tony Miller of Futures, John Wood of EMI, George Palmer of the NCC, John Goldsmith of the NCC, and John Goldsmith of the NCC.

Please reserve place(s) at the 'Solving the computer staff problem' conference to be held at the Cafe Royal, London W1, on Thursday, January 19th, 1978. The fee is £55.00 plus 8% VAT (£4.40). Invoice will be sent. Please send confirmation of booking to (CAPITALS please)

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Company
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Danbury, Chelmsford CM3 4QW

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Our client requires a commercial analyst with a programming background and good academic qualifications, capable of communicating easily with users throughout the group. (IBM 370)
TO £5K ANALYST/PROGRAMMER Luton
A good COBOL background is essential for the development and maintenance of corporate packages on our client company's IBM 370 operating under DOS/VS.
£5.5K TEAM LEADER London
A programming team leader is required to organise and supervise the work of the team. This is an IBM COBOL installation also using DL/I. Knowledge of BAL would be useful.
COMPUTECH SYSTEMS & PERSONNEL
165 Finchley Road, London NW3 6HP

Systems Analyst/ Programmer

International Security Printing Company

£4700-£5600

This new appointment arises from the proposed extension of the services provided by our ICL 2903 installation.

Reporting to the Data Processing Manager, the person appointed will be required to lead and successfully complete a programme of projects to improve and develop the data processing systems and services within the Company. A good educational background and a minimum of two years' experience of systems analysis is required.

Actual starting salary will depend on individual qualities and experience, and will be supported by a substantial range of fringe benefits.

Please write or phone for an application form to:

The Personnel Officer
Bradbury Wilkinson & Company Limited
265 Burlington Road
New Malden,
Surrey KT3 4NH
Tel: 01-947 3271

MERRY CHRISTMAS

The Classified Advertising Department of Computer Weekly would like to wish all their friends and advertisers in the computer industry a very merry Christmas and a happy and prosperous New Year.

EDITORIAL STAFF

We require an editor and other editorial staff for the fortnightly

PACIFIC COMPUTER WEEKLY

the only computer newspaper circulating in Australia and New Zealand.
Location: editor Melbourne, other staff Melbourne and Sydney.

Send full details of experience, marital status together with a recent photograph and complete curriculum vitae to —

Managing Director
Peter Isaacson Publications
PO Box 172, Prahran
Victoria 3181, Australia

The International Atomic Energy Agency, Vienna, Austria

seeks for its Computer Section (IBM 370/158; MVS)

APPLICATIONS PROGRAMMER/ ANALYST INFORMATION SYSTEMS

for systems analysis and programming in information management and retrieval applications. Experience with PL/I on IBM 380/370 OS required. Experience in teleprocessing systems an advantage. This post requires a strong interest in information systems.

Five years' relevant experience in programming and a higher education are required. Tax-free emoluments in the region of £7,600 to £8,600 p.a., depending on experience and qualifications, travel and removal expenses paid. Resident's allowance, installation grant and a dependency allowance.

Send curriculum vitae to Division of Personnel, International Atomic Energy Agency, P.O. Box 500, A-1100 Vienna, Austria, not later than ten days from today.

Rediffusion at Aylesbury Programming Manager

We have a large ICL installation — 1903A plus 1901T plus 32 key to disc stations, etc. — in a modern purpose-built computer block in the centre of the Chiltern Country. We need a Programming Manager to help plan a number of interesting future developments. He, or she, will have a minimum of four years' actual experience, preferably including plan. He or she will be well able to apply project control techniques and be prepared to reinforce our existing programme standards.

An appropriate salary, with the usual fringe benefits, will be paid and if necessary help will be given with removal expenses.

Please write briefly to: R. H. Brazier, Data Processing Manager, Rediffusion Central Services Limited, PO Box 60, Rediffusion House, Gatehouse Road, Aylesbury, Bucks. HP19 3DU

REDIFFUSION

MYRIAD APPOINTMENTS LIMITED

Computer Personnel Consultants

PROGRAMMERS New Computer

BERKS.

£5,500

Are you seeking a positive career move within a new machine environment? Our Client, an internationally recognised leader in their industry, are seeking capable Programmers with at least 2 years' experience, gained in a mainframe environment. The Company offers excellent working conditions, with the possibility of European Travel at the more senior Programmer levels. Career progression opportunities are very good and applicants can expect rewards commensurate with experience and responsibility. The Company has an agreed Systems Plan which will present new team members with interesting development projects during the coming years.

ANALYST/PROGRAMMER PROGRAMMERS

C. LONDON

To £6,000

Additional personnel are being sought for development projects within a well-established company. PROGRAMMERS should have a minimum of twelve months' COBOL. Successful candidates with at least 2-3 years' COBOL will be appointed at a more senior level. The ANALYST/PROGRAMMER will have sound COBOL experience and preferably will have had some degree of design and/or analysis involvement. Particular machine experience is not important. Previous involvement with financial, manufacturing or personnel applications would be relevant. There are definite opportunities for first-rate applicants to gain future progression to analysis or supervisory positions. A realistic salary and generous fringe benefits will be offered to those appointed.

PROGRAMMING CONSULTANT 3-4 YEARS' IBM COBOL

WEST LONDON

To £7,500

We are seeking a Programmer or Analyst/Programmer keen to accelerate his/her career by a move to Team Leading. You will be expected to play a major role in the development and implementation of financial projects from specification through to overall testing. The person appointed will have in depth knowledge of COBOL with an appreciation of DOS/VS issues. Previous supervisory experience is not essential although a commitment to maintaining high standards of coding and documentation is required. The Company, a subsidiary of a major Banking concern, offers a friendly environment with exciting prospects for career development. The offices are conveniently situated to both underground and main-line stations.

SYSTEMS ANALYST DEPUTY D.P.M.

LONDON

£5,500

An experienced Analyst is required to join a small data processing department based in London convenient for commuters using the London Bridge/Cannon Street train services. The person appointed will be able to control programming teams and will therefore have the necessary technical background together with proven analysis skills. The department is small and dedicated to giving a professional data processing service to the company. The installation is based on Burroughs medium range hardware, current projects include the development of database systems. This is an excellent opportunity for an experienced computer person to combine their expertise and develop their career in a junior management role.

Please telephone for a confidential discussion or write to:
30 Fleet Street London EC4Y 1AA
01-353 0981

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SENIOR FORTRAN PROGRAMMERS

£5,000 - £7,000

If your little bells have a hollow ring to them this Christmas, it's time to think about a new job. Like the one, which is with a bureau based on the M25/Surrey borders. A background in structure, civil engineering, stress analysis or CPAL would be helpful, and a knowledge of IBM is preferred. As a Senior Programmer, you will be involved with a lot of client contact. Generous expenses are available.

This is just one of the jobs we're looking for this Christmas. So before you get really stuck into the Christmas spirit, stagger over to the telephone.

Ring Sally Dicken today!

Datascene Limited
Sceptre House
169-173 Regent Street, London W1R 7FB

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MINI-PROGRAMMERS LAPLAND ONE-SHIFT CONTRACT

Our client is an internationally recognised institution, heavily involved in the distribution of consumer durables. The year's planning activities in a one-way operation during which our client and his representatives have to be simultaneously present at a wide range of locations. With an intense sense of humour, applicants should also possess a wide knowledge of programming undertaken in an atmosphere of hearty laughter and the occasional switch of language. The hardware used is a Real 77, operated under JOLLY and HOMO. An additional programming undertaking in an atmosphere of hearty laughter and the occasional switch of language is envisaged, but benefits include a pension and last year's bonus plus a travel supply of belly dust. The shift commences on the evening of December 24th. This vacancy is exceptional. However, we have others handy for interesting for Mini-Programmers, in all areas, at salaries ranging from £2,750 to £6,850.

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PROGRAMMERS WHO WANT TO BE ANALYSTS to £4,000 p.a.

This is the ideal time to put out the old cliché 'New Year, New Job'. Because this vacancy — with the Computing Services Division of a major transport and storage company — is for a Programmer who will become an Analyst/Programmer during 1978. The hardware used is an ICL 1902A under GEORGE II, with a Communications system currently being developed. The main language is COBOL, but an additional knowledge of PL/I would be helpful. You should have around 12-18 months solid experience on either IBM or ICL equipment. The Department is small but busy, situated near London Bridge, and perks include 4 weeks' holiday, 25p a day LVs and free pension scheme. We have many other vacancies for Programmers at all levels, from January on. So, before the turkey and pull get to you, Ring Phil Goodridge today!

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JUNIOR OPS

AREA	LOCATION	START DATE	END DATE	WEEKLY PAY	PERKES
OPS	W. LONDON	1/1/78	31/12/78	£2200	10% +
OPS	E. LONDON	1/1/78	31/12/78	£2200	10% +
OPS	N. LONDON	1/1/78	31/12/78	£2200	10% +
OPS	S. LONDON	1/1/78	31/12/78	£2200	10% +
OPS	W. LONDON	1/1/78	31/12/78	£2200	10% +
OPS	E. LONDON	1/1/78	31/12/78	£2200	10% +
OPS	N. LONDON	1/1/78	31/12/78	£2200	10% +
OPS	S. LONDON	1/1/78	31/12/78	£2200	10% +

SENIOR OPS/MANAGERS

AREA	LOCATION	START DATE	END DATE	WEEKLY PAY	PERKES
OPS	W. LONDON	1/1/78	31/12/78	£3500	10% +
OPS	E. LONDON	1/1/78	31/12/78	£3500	10% +
OPS	N. LONDON	1/1/78	31/12/78	£3500	10% +
OPS	S. LONDON	1/1/78	31/12/78	£3500	10% +
OPS	W. LONDON	1/1/78	31/12/78	£3500	10% +
OPS	E. LONDON	1/1/78	31/12/78	£3500	10% +
OPS	N. LONDON	1/1/78	31/12/78	£3500	10% +
OPS	S. LONDON	1/1/78	31/12/78	£3500	10% +

AND MANY, MANY, MORE!

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HIGHLY AMBITIOUS PROGRAMMERS

Ready for Systems Design

To be based SOUTH LONDON/SURREY

CONSIDER THE ADVANTAGES of working for this minicomputer hardware/software supplier:—

- * Endorsement by one of the world's largest and most successful computer manufacturers.
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Our Client's business is to install real-time commercial mini-computers into end users.

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Up to £6,500 plus project bonus

To take responsibility for project management, co-ordination and analysis; this person should have good commercial systems experience on minicomputers or small business systems

PROGRAMMERS

£4,500-£5,500 plus project bonus

Your background should include real-time mini or small mainframes, with programming in Cobol, RPG, Basic, Fortran or Coral. Early opportunities exist for ambitious people to move into systems and team leadership roles.

Telephone now for an interview. Successful candidates may well be offered key posts before Christmas to start early in the New Year.

For a confidential discussion regarding this position please contact:

Compu-call Recruitment Services
Consultancy Division
Bondway House
3/5 Bondway
London SW18 1BJ
Telephone 01-582 8888



ATKINS IS ON-LINE

Since 1969 our objective as a remote computing bureau has been stable profitable growth. We have consistently achieved that objective. Now, we are a major part of On-Line Systems Inc. of Pittsburgh, Pa. They too have achieved that objective.

For the future, we aim to increase our growth rate still further. That means more top quality men or women at our Epsom offices. Staff who can solve clients problems. Staff who can work under pressure. Staff who can grow with Atkins Computing. If you fit the bill, phone the Managers below straight away - our number is Epsom (03727) 40421. Alternatively, write to them at the address below, giving a brief CV.

Engineering Programmers c £4,500

To develop programs dealing with problems in structural, civil and mechanical engineering and to be involved in training and supporting clients using them. You must have an engineering qualification, experience of Fortran in the engineering environment, and be keen to help others solve their problems.

Contact: Clive Stirling.

Project Management Consultants c £7,000

To provide pre and post sales support to users in all sectors of industry and commerce for our exclusive project management system. You must have experience in project management disciplines and/or have a good knowledge of computerised project management techniques.

Contact: Rod Baker.

Systems Programmers c £5,500

To develop and maintain mainframe timesharing operating systems software. You must have a technical programming background, with a working knowledge of 32 or 36 bit Assembler and/or Fortran.

Contact: Roger Coley.

APL Specialists c £5,500

To train our clients in APL programming techniques and to develop their use of this language. You must have extensive APL programming experience, perhaps as a bureau user.

Contact: Steve Thompson.

Business Systems Analyst/Programmer c £5,250

To develop on-line and batch

systems to tight timescales. Experience of on-line data entry, on-line sales order processing, accounting packages or stock control will be needed.

Contact: Paul Venn.

Product Marketing Executives c £7,000

To promote services by advertising, packaging, sales aids, training and pricing so that they are sold profitably. A sales or marketing background is essential.

Contact: Roger Trout.

Financial Modelling Programmers c £5,500

To develop financial modelling programs and to support clients using them. You will need to be an experienced Fortran or APL programmer who has specialised in the financial modelling area.

Contact: Steve Thompson.

Communications Technician c £4,000

To maintain the equipment in our extensive communications network. A communications qualification, experience of time division multiplexing and modem equipment and the ability to undertake first line repairs are essential.

Contact: Alan Lewis.

Business Systems Programmers c £5,000

To develop in Cobol on-line and batch systems. You must have at least 18 months Cobol experience, be used to working to tight timescales and have experience of on-line business applications.

Contact: Paul Venn.

Management Sciences Programmers c £4,000 and c £5,000

To develop and maintain programs for financial modelling and production control applications. You must be a first class Fortran or APL programmer - if necessary, training in APL will be given.

Contact: Steve Thompson.

Atkins Computing Services Ltd.
Woodcote Grove, Ashley Road,
Epsom, Surrey KT18 5BW.
Tel. Epsom 40421



Atkins Computing
ON-LINE SYSTEMS

Top Vacancies



Top Vacancies

CONSULTING SERVICES SALESMEN (Timesharing & Turnkey Systems Incorporated) £8,000-£15,000 UK

With further large scale expansion planned throughout 1978, the group urgently needs experienced top level salesmen to help penetrate existing large volume consultancy, turnkey systems and timesharing markets. EMS at present have a product range covering the entire UK market, offering scope of penetration in at least 5 major DTI user problem areas, ensuring constant work availability.

Ideally, candidates will be capable of functioning as Business Analysts, able to rapidly identify client problems, define services available and to collate and present appropriate reports at Board level. Equally, preference will be given for salesmen able to effectively present lecture topics at varying UK and European seminars and marketing demonstrations of new equipment services such as turnkey systems.

Ability to project accurately time scales for systems and programming projects will be beneficial, as would knowledge of how to define configurations required with turnkey systems or to assist with hardware evaluation and package evaluation.

Excellent opportunities exist for leading salesmen to acquire a managerial role if required, within individual sectors of the group. Candidates must be employed in a similar capacity in the UK and accustomed to producing consultancy business, minimum value £200,000 p.a. Hardware business minimum value £400,000 or a turnkey systems value to be discussed. A dedicated company commitment will be judged as important for future employment within the group.

Consultant: John Wood.

PROGRAMMERS COBOL/ASSEMBLER/PL1 IBM/HONEYWELL/ICL ETC. LONDON & HOME COUNTIES £3,500 to £6,000

EMS at present have hundreds of Southern clients desperately seeking programming support staff to work on a wide variety of projects including sales ledgers, accounting ledgers, payroll, stock control, production control, Management Information Systems, Database Development, Networking, etc. Most installations currently use EMS recruitment facilities to assist both to maintain and increase manning levels within the company. Each day up to 50 vacancies are forwarded by post or telephoned from the Southern Home Counties. Clients include Banks, Bureau, Consultancies, Distributors, Engineers, Manufacturers and Computer Manufacturers, Insurance Companies, etc. Each application from returned to EMS is processed within 24 hours and in the hands of relevant clients within 48 hours. EMS candidates are generally attending a series of interviews within a week of applying to us. We urgently need your profile also to help us assist hundreds of clients achieve recruitment stability. Salaries are attractively geared nowadays at most installations for motivated and conscientious staff. Telephone today for our application form.

Consultant: Selma Mills/Carol Proudman/Don Walklate

PROGRAMMERS - COBOL/PL1 - MIDLANDS & NORTH £3,500 to £5,000

At present, we are submerged with the sheer quantity of outstanding vacancies from clients desperately seeking to attract additional staff to assist with key development programmes. Both PL1 and COBOL programmers are in very high demand. Literally up to dozens of vacancies are available for each applicant we receive, depending upon locations. Wide choice exists for staff with between 1 and 5 years' practical DP experience, as well as opportunities to move from programming to an Analyst/Programmer career path if desired. Installations vary on a wide scale from commercial to industrial, embracing all industries and services. EMS are currently placing up to 20 programmers alone in the Midlands each week and could be placing 200 with more significant advertising response. Telephone today for an application form and we will get your career development moving for you.

Consultant: Selma Mills/Carol Proudman/Don Walklate

ANALYSTS & ANALYST/PROGRAMMERS - UK TO £6,000

Each week over 500 vacancies for Analysts are available with EMS throughout the entire UK, in every major city and town in the country. Extensive national networking by our teams results in new job opportunities rapidly being identified for new candidates within 48 hours of receipt of your application form. Every profile is cross checked against thousands of vacancies held on the group computer, enabling us to provide you with a choice many times greater than available elsewhere. High demand at present exists for Analysts experienced in CICS, Database (IMS), Networking Systems, Database Systems, Production Control and Planning, Accounts ledgers systems and Sales Order Processing. Analysts completing an EMS profile this week will be attending interviews within 7 days on average performance. Apply to EMS today - we get results, a salary increase for you, new interesting career prospects, and it doesn't cost you a penny.

Consultant: Neil Bratley/A. Tyler/Don Walklate

ANALYSTS - HERTS TO £6,000

We urgently require experienced Analysts for a major distribution group involved in extensive systems conversion and enhancement. Experience is on ICL or IBM hardware although other hardware would be considered. Basically, we seek knowledge of applications procedures and development in Accounting/Sales Order Processing, Stock, Inventory/Control, Merchandising and M.I.S. Large quantities of staff are required from Junior Analyst to Team Leader level. Assistance will be given with relocation where appropriate. The company is located in attractive rural surroundings within the Hertfordshire area and offers excellent career development prospects.

Consultant: John Wood.

OPERATORS - LONDON & H. COUNTIES TO £5,000

Numerous vacancies are available each week with a wide variety of clients seeking additional support staff to assist with developing installations. Single and multi-shift systems exist with appropriate premiums being paid for shift working. Clients vary between IBM, ICL, Honeywell and Unisys and Minis. Equally, early shift/weekend/night manager prospects are available with expanding installations. Knowledge of JCL is highly sought by IBM installations, as is CECIL/IT, II, and III or NEW RANGE by ICL installations. Apply to EMS for an application form today and get real career prospects - and a raise!

Consultant: Selma Mills

CONTRACT REQUIREMENTS

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Honeywell Progs. COBOL, TDS, IDS
ICL COBOL/PLAN various London
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FORTRAN, ALGOL Progs - Surrey/Berks
Analysis - Package Development - Berks

MIDLANDS & NORTH

Analysts - Distribution North West
Analysis - Production Planning North West
Analysis - Package Design - Midlands
Programmers Honeywell COBOL Midlands
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Progs IBM ASSEMBLER/CICS - Staffs
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Att DP Managers

EMS maintain the most comprehensive databank of Recruitment and Contract Analyst/Programmer/Operator files in the UK. For Recruitment or Contract Support - contact EMS for nationwide service. We offer Speed, Low Costs and - Results!

ONE PROGRAMMER

The position offers positive career prospects in a fresh thinking programmer who can project this, her ideas to fellow professionals.

Based in the LONDON AREA our client requires candidates to have one to two years' PL1 experience, preferably in an IBM DDS environment. Any Assembly knowledge, although not essential, will be considered a considerable advantage as would the ability to communicate at all levels.

A 5% MORTGAGE SUBSIDY

plus a competitive salary is only part of an excellent benefits package which includes:

SUBSIDISED STAFF RESTAURANT • EXCELLENT RELOCATION EXPENSES • SPORTS AND SOCIAL CLUB WHICH INCLUDES SQUASH COURT FACILITIES • FREE PARKING • FOUR WEEKS' HOLIDAY.

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Our client, a major consumer goods company, is currently installing a Honeywell 60 Series Computer which will become the nucleus of a national telecommunications network within the next 12 months.

SYSTEMS ANALYSTS £6000 PLUS

Candidates should have a minimum of three years' systems experience with involvement in at least two 'major' systems from analysis through to implementation, combined with the ability to supervise a team of analysts.

Although not essential, a programming background would be a considerable asset as would knowledge of Database and Transaction processing.

Our client has an outstanding benefits package which includes:

ANNUAL MERIT REVIEWS	FREE BUPA	SUBSIDISED LUNCHES
FOUR WEEKS' HOLIDAY INITIALLY	EXCELLENT PENSION SCHEME	SPORTS & SOCIAL CLUB

For more information and to arrange an informal interview ring STUART WINFIELD on 01-439 9817/8 or write 2 GREAT MARLBOROUGH ST. LONDON W1V 1BE after office hours 01-439 3933



2900 Technical Managers VME/B Specialists

(Currently earning a basic salary of £5000-£7000)

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We are excited at the quality and growth of our 2900 services based on excellent working relationships with our customers and on the standard and quality of our own people.

In order to continue this expansion we need people to participate in our growth plans and secure their own future.

Technical Managers

must have experience of implementing major 2900 projects.

Systems Programmers

must have in-depth experience of building or maintaining VME/B

Senior Programmers

must have experience of 2900 Cobol and/or Fortran.

Opportunities exist for retraining programmers with good experience on other machines to work within the 2900 Group.

Salaries offered are attractive and in addition Marcol operates a generous overtime and award scheme.

For further information contact Derek Ashley on 01-402 9355, Marcol Computer Services, 60 Queen's Gardens, London, W2.



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This is an excellent opportunity for an Electronics Engineer to become involved in original work while utilising past knowledge and experience. The NCR European Technical Education Centre at Dundee caters for the whole European and some Middle East requirements on a range of equipment including terminals, small and large computer systems and peripherals with on-line communications. The ideal candidate, male or female, will be aged 25-35, be prepared to travel and be educated to minimum ONC in electronics with experience in EDP systems. Technical instruction would be desirable but not essential. The remuneration package offered will be very attractive including a negotiable salary, pension and life assurance schemes, bonus scheme and catering facilities. Please write giving full career and personal details to: Mr. J. Fowler, Manager, European Technical Education Centre, NCR Ltd., Dunelm Avenue, Dundee, Scotland DD1 1JH.

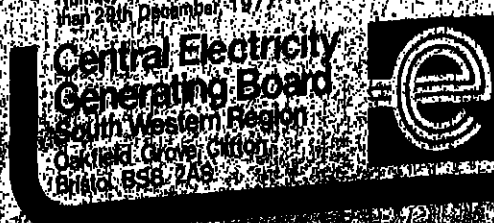
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Up to £3945

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A two shift system is currently in operation and a third shift will be introduced early in 1978. Successful applicants will be required to find their own transport to and from work. Some operating experience would be an advantage, preferably of ICL 1900 series computers. The posts will be based at the new Regional Headquarters, Belper, Derbyshire. South Bristol but will be open to the present accommodation at Clifton, Bristol until early 1978.

Applications: on Form AR/1 obtainable by phoning Bristol 92251. Ext. 18 or by writing to the Personnel Department, Belper, Derbyshire. Vacancies closed 31.12.77 and returned to him by not later than 28th December 1977.



For contract programmers and operators, 1978 starts now.

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Contracts for men and women with 4 years' experience or more.

IBM-Programmer/Analysts

Amsterdam, Luxembourg, London	IBM OS COBOL
Surrey	IBM OS COBOL & BAL
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Beckenham	IBM OS COBOL
N.E. England	IBM VM/CMS COBOL
North London	IBM ANALYST

IBM-Project Manager

North London IBM MAINFRAME EXP.

Mini/Microprocessor

London ASSEMBLER

ICL

London	SYSTEMS ANALYST
London	ICL COBOL
London	ICL COBOL/DRIVER

For details of any of these contracts, phone Richard Kozlowski, Michael Doherty or Suzy Gillam on 01-491 4706.

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With 2 1/2 years' experience or more, we can offer you a range of contracts now with these machines and operating systems - and more.

ICL GEORGE II & ICL GEORGE III

ICL SYSTEM IV

IBM OS/VS1

HONEYWELL 66/20 GCOS

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14 Old Park Lane, London W1V 4NL. Tel: 01-491 4706.

Staff Services Division of BCC Datasolve Group and a member of Computing Services Association

DEPARTMENT OF DEVELOPMENT COMPUTER DEVELOPMENT OFFICER

Grade PO1B, Salary £5797-£6382 p.a. inclusive

Systems Analyst with practical experience of programme writing required to investigate and promote the further use of the Council's Computer in a professional and technical department.

The successful applicant must have a wide experience in this field; enthusiasm and the ability to transmit ideas to staff of other professions.

Further details and application forms from the Administration Manager, Room 708, Brent House, High Road, Wembley, Middlesex, returnable 5 January, 1978. Telephone 01-903 0371 (24 hour Answerphone Service). Reference number D/96/D, must be quoted.



just in case

MYRIAD OPERATIONS

Computer Personnel Consultants

Myriad would like to hear from OPERATIONS PERSONNEL seeking a career move in London or the Home Counties. Telephone our Operations Consultant for a confidential discussion, whether or not you see the job you want listed below. We will not release your details to any organisation without your consent.

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Supervisory experience and self-motivation are important.
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Operator, min. 18 mths. MCP. Service bureau — offers good prospects.
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City £3900

OPERATORS DOS/VS

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Please telephone for a confidential discussion or write to:
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01-353 0981

Glaxo Holdings Limited

Operations Manager c £7,500

Glaxo Holdings is the parent company of a leading international group, with a turnover exceeding £400 million, which conducts research and develops, manufactures and markets a range of pharmaceuticals, foods and surgical equipment.

The Group Computer Centre provides a batch and on-line financial and management information service to the executive directors and senior management of the parent company and in addition offers a remote job entry facility to one of the major manufacturing subsidiaries, using a newly installed ICL 1903T 128K operating under George 2+. Data preparation work is performed on Kude Datavet equipment.

A vacancy has now arisen for an Operations Manager to take control of the operations section, comprising a total of 16 people. It is anticipated that the man or woman appointed will be aged between 27-35, possibly a graduate, with at least 5 years' significant experience in computing including a minimum of 2 years in an operations management capacity, preferably in a 1900 environment.

This is a senior appointment reporting directly to the Data Processing Manager. Total first year income will be in the region of £7,500, including both London allowance and bonus. The Company offers an excellent conditions of employment package and assistance with re-location expenses will be given where appropriate.

Please write, giving brief career details, to: P. A. Drew, Glaxo Holdings Limited, Clarges House, 6-12 Clarges Street, London W1Y 8DH.

TECHNICAL OPERATIONS MANAGER

£5600 - £6500 p.a. plus car

As a result of our continuing expansion in the United Kingdom, we require an experienced Computer Professional to assist in the development of our computerisation programme.

The Technical Operations Manager will manage the operation of an existing installation using a mini computer and assist with the implementation of new applications involving the introduction of a second installation during 1978. He/she will be responsible for the management of both installations and should be prepared to work flexible hours to approximately 8 p.m. (and occasionally later) Tuesday to Saturday.

The successful applicant, who is likely to be aged 25-35, must have a knowledge of R.P.G. or other high level language. Previous experience of installing a mini computer would be an advantage.

Conditions of employment are those normally associated with a progressive international Company and include a Company car, pension scheme, subsidised canteen and special facilities for car purchase.

Handwritten applications should be addressed to —

Mr. K.R. Broome,
Administration and Personnel Manager,
Citroen Cars Ltd.,
Mill Street, Slough, Berkshire.

CITROËN

POLYSAR

Polysar International SA is the Overseas Sales Organisation for a Canadian owned international Group engaged in the manufacture and sales of synthetic rubber, latexes and plastics, established in Fribourg, Switzerland since 1962. We have an interesting opening in our EDP Department for an

ANALYST/PROGRAMMER

Applicants should be graduates in Economics/Finance or associated disciplines who have proven experience in a commercial organisation. At least two years' EDP background with some exposure in the analysis field, ideally involving international operations, as well as strong programming ability with emphasis on COBOL and/or RPG-II are essential requirements for this position. Linguistic knowledge should include fluency in English and French.

The successful candidate will be entrusted with varied and interesting work assignments. A certain amount of his time will be spent outside Switzerland. We offer fair remuneration commensurate with qualification and performance, and social benefits expected from a progressive Company.

If you are interested in this opening please send your resumé to:

The Assistant Personnel Manager
Polysar International S.A.
10, Rte. de Basumont
CH-1701 Fribourg/Switzerland

CAREER OPPORTUNITY IN COMPUTER ANALYSIS AND PROGRAMMING

The bank for international settlements, an international institution situated in Basel, Switzerland, has a vacancy for an Analyst/Programmer in its Technical Services Section.

Requirements: a minimum of 5 years' experience implementing applications of a banking or accounting nature in support of on-line systems, preferably in PL/1 and Assembler. A good command of English is required as well as a sound working knowledge of French or German. The successful candidate will be employed initially in the Accounting Section for a period of about 18 months and will later assist in programming the bank's on-line systems. He or she might eventually be appointed supervisor of the application programming team.

The BIS offers interesting and challenging work, a competitive starting salary and substantial staff benefits, such as first-class pension and welfare schemes, a staff restaurant and a sports club.

A detailed curriculum vitae, accompanied by references and a recent photograph, should be submitted to Mr. S. Hillbert, Staff Manager, Personnel, Bank for International Settlements, P.O. Box 262, CH-4002 Basel, Switzerland. Applications will be treated in strict confidence.

FALMER JEANS LIMITED

require a

DATA PROCESSING MANAGER

We have recently ordered a B.1800 computer system to be installed at our distribution and administration centre in Essex. We are fast expanding and operate from several locations in the U.K. and Europe.

The position offers an outstanding opportunity to a person wishing to progress in management and play a central role in the development of a new and advanced system.

The salary is negotiable, dependent on age and experience and will be in the range £5,000 to £8,000 per annum.

Please write with full details of age, qualifications, experience and current salary, to:

Mr. K. Wright
Falmer Jeans Limited
Claydons Lane
Rayleigh, Essex

FALMERS

RACS

SYSTEMS ANALYST

c £5100

PROGRAMMER/PROJECT LEADERS

c £4000-£4900

Applications are invited from persons with the relevant commercial, programming and analytical experience to join a development team engaged on a number of challenging projects.

The installation comprises an IBM 370/145 running under DOS/VS and CICS/VS, and in addition an on-line system using 3270s, we have a retail store system with point of sale terminals and other remote terminals.

Please write giving brief details of experience and age to:
Financial Controller
Royal Arsenal Co-operative Society Ltd.
147 Powis Street, Woolwich, London SE18 6JN
or telephone: 01-854 2000 Ext. 418

LONDON BOROUGH OF ENFIELD

Systems Analyst/ Programmer

£4,161-£4,507

Applications are invited for this appointment in the Computer Section of the Borough Treasurer's Department. Candidates should be experienced COBOL Programmers, preferably with systems training or experience.

The Borough's computer installation currently consists of a 64K ICL 1902T and planned expansion includes 7502 terminal systems.

An application form is obtainable, upon receipt of a foolscap S.A.S., from the Borough Treasurer, P.O. Box 64, Civic Centre, Silver Street, Enfield, EN1 3XP. Closing date 8th January, 1978. Please quote reference ORA/55.

MEDICAL RESEARCH COUNCIL Institute of Hearing Research University of Nottingham

SYSTEMS PROGRAMMER

This is a responsible post in a new and expanding research unit which will provide opportunity to collaborate with members of the scientific staff. Applicants should have a postgraduate qualification in Computer Science and some experience of both data base management and real-time data acquisition. The Institute will be purchasing a powerful central system for medical record search and for the high data rate analysis and synthesis of sounds especially speech. The successful applicant will be expected to assist in the selection of a powerful 16-bit computer configuration and in evaluating suppliers' data base management systems. Writing interfaces to routines for novel real-time applications will form a major part of the duties.

Recently qualified candidates are normally appointed initially in the Technical Officer (salary scale £3684-£4282). This offers the prospect of transfer to the Research Officer category (salary scale £4282-£4466). Both salary scales include a 10% plus supplement.

Further details and application forms are available from the Director, Institute of Hearing Research, 101, Medical School, Nottingham NG7 2RN, to whom applications should be sent by 15th January, 1978. The post will be filled as soon thereafter as possible.

DATA PROCESSING MANAGER NORTHANTS SALARY c£5,000 P.A. "MAKE 1978 YOUR YEAR"

Our client, a market leader in its field, currently operating a new IBM system 3 mainframe, wish to recruit a computer professional with a programming and systems background to head the Data Processing Department.

Ideally, candidates should be aged between 25 and 40 and should have:

- * RPG II and/or COBOL programming experience, combined with some knowledge of systems.
- * the personal qualities needed to liaise with senior members of the company,
- * the desire to progress into a management role.

The company are engaged in active systems development plans to include: Budgetary planning (corporate modelling)/Product Analysis (wholesale and retailing)/Personnel Data/Costings (factory products)/Retail Management information system.

The position would appeal to a data processing professional, capable of accepting a stimulating challenge.

Normal large company benefits apply and include: extensive discounts on company products, a contributory pension scheme, four weeks' holiday, free BUPA and assistance with relocation.

If you feel you have the experience and personal qualities needed to accept a management role, contact without delay:

REG HEATH

ON: 021-236 3781

REF. NO. CW/12/89

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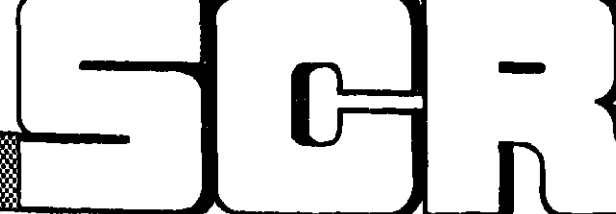
MANCHESTER 061-833 0676 FREEPOST

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Freeport 6, 102, Blandford Street, London W1E 1JZ

 Computing
Services
Association



SENIOR SHIFT COMPUTER OPERATOR Hinckley

British Gas has a network of real-time computers which is used to monitor and control the National Gas Transmission Grid. A vacancy exists for a Senior Shift Computer Operator to complete a team providing continuous operational support of the machines.

Applicants should have at least 2 years' operating experience, preferably on large real-time systems. Four 'O' levels or equivalent qualifications are normally required but the ability to think clearly, sometimes under pressure and to work unsupervised on varying workloads, could be more important.

This is a responsible job on a system of considerable technical interest. Housing in the immediate area is very reasonably priced; the cities of Leicester, Coventry, Nottingham and Birmingham are within easy reach. Working conditions are excellent with good opportunities for leisure activities outside working hours.

Salary is from £3900-£4874, inclusive of 26% shift allowance and salary supplements.

For further preliminary details telephone Mr G. P. Brown on (0455) 38111 Ext. 2173 please quote reference PS/08001 (705)

BRITISH GAS

Portsmouth Highbury Technical College

Programmer/Analyst

A new ICL 2903 has recently been installed and will provide a computing facility for use by all the departments of the College.

The successful applicant, to commence January, 1978, will be required to provide a programming and advisory service for the development of applications and systems software.

Applicants should be of graduate or equivalent educational standard and preferably have had at least one year's programming experience in COBOL and/or FORTRAN or ALGOL.

Salary: £3,395 to £3,773 for AP 3 and £3,864 to £4,214 for AP 4.

Application Forms from The Secretary, Highbury Technical College, Portsmouth PO8 2SA (enclose SAE) or Gosham 83131 (Ext. 2477).

CONTRACTS MANAGER

Croydon Based

With the growth and success of our contract division, Force B Computer Services require an additional member of staff to concentrate exclusively on the negotiation of contracts with clients and the placement of contract staff.

The person required may be a Senior Programmer or already established in this kind of job. You must be outgoing, interested in people and now wanting to develop your career.

Please telephone 01-680 3761 for further details or write enclosing a C.V. to Force B Computer Services, 8 Mill Walk, Croydon.

Manchester Metropolitan Borough Council FINANCIAL SERVICES PROGRAMMER

The authority runs an ICL 1904S computer operating under George 3. It requires an experienced programmer to develop and maintain its financial services. The successful candidate will be responsible for the design, development and testing of programs for the control of a small number of staff. An attractive salary is offered plus usual fringe benefits. Please contact: E.C. 3, Trafford Kings Avenue, on 01-474 5151.

D.P. MANAGER

Required by our client for their IBM system 3 installation — should be experienced with RPG II and capable of controlling a small number of staff. An attractive salary is offered plus usual fringe benefits. Please contact: E.C. 3, Trafford Kings Avenue, on 01-474 5151.

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The product has already been outstandingly successful in the U.S.A. where it has been sold extensively, mainly to IBM main-frame users. Our Clients are heavily committed to investing in continued development and enhancement of the product and will be giving it extensive publicity and support.

The candidate profile will not be easy to meet, as we are looking for the true professional; self-motivating, ambitious, capable of complete autonomy to develop business interests and able to communicate perfectly at all levels of management. A pre-requisite is a proven successful track record in selling computer products over the last 3-5 years with a major manufacturer and a sound knowledge of IBM hardware and software would be a distinct advantage.

True, we are asking a great deal and are looking for the best, but the potential and rewards that our Clients offer are in turn exceptional. Candidates who feel they identify with our requirements are invited to contact the Advising Consultant to arrange an immediate meeting for further discussions. When replying please quote the relevant reference number CW/212/1.

HUTTON EXECUTIVE SELECTION LTD.
HUTTON HOUSE,
HUTTON STREET, LONDON EC4Y 8HR
01-353 6187 (Office Hours)
01-353 1426 (Answerphone Service)





NEWS IN BRIEF

Viewdata goes to Zurich

HIGHLIGHTING the export potential of the Post Office's Viewdata service, a conference on Viewdata is to be held next year in Zurich by Butler, Cox and Partners in collaboration with the Post Office.

The Zurich conference will be held on March 2 and a similar conference will be held in Birmingham on February 14.

The conferences will follow the format of a successful London conference held earlier this year, the transcript of which is now available for £80. Details of the conferences and the transcript can be obtained from Butler, Cox and Partners, The Press Centre, 76 Shoe Lane, London EC4 3JB.

New factory

THE Scottish manufacturer of banking terminals and word processing equipment, Fortronic (Fife), has opened a second factory at Fife, adding 14,000 square feet to its production and development space.

Compeda board

TO further strengthen its marketing and support subsidiary Compeda, the National Research Development Corp, has appointed its financial director, David Thomson, as chairman. Another NRDC officer, Thomas Fellows, is to serve as a part-time board member.

French Bill

THE French privacy and protection Bill, which had its first reading two months ago (CW, October 13), has been heavily amended in the Senate, and returns to the National Assembly for a second reading this week.

COMPUTER WEEKLY

1977—that was the year when the micro came into its own

1977 WAS the year in which the microprocessor emerged as a major catalyst in making the computer community, and society as a whole, more aware of the impact that information technology is likely to have on all aspects of society.

It was also the year of IBM price cuts and the switch of Geoffrey Cross from ICL managing director to GEC Stateside company hunter; a year of increased recognition for the computer services business and a major shortage of skilled computer staff.

These were some of the most commonly quoted events of the year according to an end-of-year survey by Computer Weekly which asked a number of industry experts, "What were the highlights of 1977?"

David Finberg, director of the National Computing Centre, pointed to the need for studies at national level to analyse the impact of information technology.

"The year saw the emergence of real concern among an increasing number of people that the availability of aggressively sold, cheap and mass produced computer sto-



Finberg

Barron

rage and processing devices had widespread implications and that these implications, both good and bad, ought to be seriously studied at a national level," he said.

The Computer Weekly/ACM conference on "Can Computers save Britain?" (CW, July 14), held at Hedsor Park, was cited by the director of the government's Central Computer Agency, Reay Atkinson, as one of the most important events of the year which helped to crystallise attention on the impact of information technology.

He also felt that microcomputers were now having an impact not only on computer

people but also on end users.

One of the Hedsor speakers, consultant Iann Barron, coined the phrase "transputer" to signify the impact of the micro.

"The single-chip micro is primarily concerned with what is happening outside the processor whereas the traditional mainframe and minicomputer are primarily concerned with the computational activity within the computer."

For the services industry, 1977 was the year when that side of the business achieved recognition by both the public and private sectors, according to the director general of Computing Services Association, Alan Benjamin.

"This was the year it all happened for us," he said. "Our collaborative studies with the government crystallised this year and there were big organisations in both sectors giving major system development contracts to systems houses. And it's now becoming recognised that part of a computing professional's career should be spent in the services industry because of the standards and the levels of training."

Government recognition of the importance of a viable national software business with "a welcome intervention by the NEB through the formation of the Insac computer services company" was emphasised by ASTMS national organiser, Tim Webb.

But, he added, "although trade union membership continued to grow among computer staff, it was not a good year for the industry as a whole, with government pay policy creating a major obstacle in recruiting qualified technical staff on to frozen salary scales."

For Neville Taylor, chairman of the Data Processing Management Association, 1977 would be remembered for the start of the mini/micro revolution coupled with an increasing emphasis on the user. Professor Paul Samet, BCS president, and director of the computing centre at University College, London, said that 1977 saw the beginning of a realisation that distributed processing systems will change the nature of computer departments and the way they will work.

Low costs of labour attract investment in UK

THE low cost of labour, good management and software skills and use of the English language are factors which attract investment in the UK by foreign-owned computer companies. But the availability of a larger skilled labour force and better financial inducements in the rest of the EEC are powerful inducements for investment to be made in other European countries.

These were the main findings of a study of the investment criteria used by multinational companies operating in the UK. The study is being carried out by

the multinational sub-committee of the Neddly computer sector working party.

The survey was conducted among 15 multinational companies, although only nine completed a questionnaire prepared by the sub-committee. The other companies are discussing the factors covered by the questionnaire in meetings with the sub-committee.

Although the sub-committee's interim report says that it was "disappointed" at the overall response to the questionnaire, as it had followed discussions with the companies involved, it was satisfied with the co-operation received from the companies through a series of meetings which are still being held.

A DEC spokeswoman said

that the main reason the company had not completed the questionnaire was that it would have to reveal proprietary information, but that the company had subsequently had a "long and fruitful" meeting with Neddly representatives.

Other companies which did not fill in the questionnaire were IBM, Burroughs, CDC, Olivetti and Siemens. Companies completing the questionnaire were Data General, Interdata, NCR, Nixdorf, Univac, Hewlett Packard, Honeywell, Philips and Raytheon Coscor.

In its report, the sub-committee says that it expects the UK balance of payments deficit for computer trade to worsen in 1977 from last year's deficit of £110 million.

'Prepare for bloodbath'

By Keith Jones

LEASING companies that have assigned inflated residual values to their clients' IBM 370 machines should prepare now for a bloodbath. This warning was made at a leasing seminar in the US by Sonny Monosson, president of the Boston-based consultancy, the American Computer Appraisal Service.

One of the main causes of the disaster, according to Monosson, will be leasing companies' reliance on the insurance cover provided on residual

values by underwriters at Lloyd's of London — a problem highlighted last week (CW, December 8).

Monosson pointed out that the leasing of new large computers had been very easy with Lloyd's underwriters guaranteeing the revenues from them, but leasing companies had been blind to the fine print in the Lloyd's policies saying that they would have to exercise "due diligence" in their remarketing.



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Japan to cut tariffs?

A POSSIBILITY that Japan will cut tariffs on imported mainframes and peripherals has been reported in the US, but the Japanese Ministry of International Trade and Industry says no decision has been reached.

Japan is under considerable pressure from both the US and the EEC to cut tariffs on a broad front in order to give a stimulus to the world economy and cut back its enormous foreign trade surplus.

HPAC CORAL 66

COMPUTER AUTOMATION ALPHA 16 LSI-2 NAKED MINI LSI-2

HPAC has developed a CORAL 66 compiler for COMPUTER AUTOMATION's LSI-2 comparable to the powerful RMC CORAL 66 compiler for the PDP-11. The same source programs have been compiled under each of the compilers and run with identical effect on the respective computers.

Full information on both compilers is available.

HUGH PUGHMAN ASSOCIATES (COMPILERS)

Newfoundland House, The Quay,
Poole, Dorset BH15 1HJ. Tel.
Poole (02013) 70510 or 70307.
Telex: 41495.



DoE sets up CAD research programme

PROGRESS in computer architecture and building design is to be the subject of a research programme initiated by the Department of the Environment. As a first step, Systems Simulation Ltd. has been commissioned to develop a work plan for the project.

The DoE research aims to coordinate experience in computer aided design building and to improve understanding of its capabilities and current limitations.

The man-computer interface is seen as a particularly critical area for these systems, and the Department expects to gain experience from several projects including hospitals and general business systems.

The research will consider particular tools, techniques and may make recommendations on the Department's own system, Cedar 3, which is about to enter an evaluation phase.

Systems Simulation director, Alan Sutcliffe, feels that optimism about computer-aided building design was justified.

"There is a lot more to do than the enthusiasts thought. Now the time to take stock and where we must go," he said.

"There are many good computer systems available," continued, "but the big problem remains architectural resistance to their use."

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THE JOB

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THE PERSON

Applicants should be computer engineers with a minimum of 3 years experience and knowledge of IBM 360/65 or 370/168 computer systems. The DPCE team is proud of its record and, to match present performance, candidates would have to be highly motivated, industrious and skilled.

Applications with career details, in writing, please, to: David Travers, Engineering Services Manager.

D.P.C.E.

Data Processing Customer Engineering Proprietary Limited,
61 Harcourt Road, Watlington-on-Thames, Surrey KT12 1RJ.
Telephone: Watlington-on-Thames 20682/3. Telex: 884688.

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